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ABSTRACT

Findings are presented from the third year of the demonstration of the Guidance Information System (GIS), a computer-based information delivery system providing occupational, two-year college, four-year college, and financial aid information to students in two-year colleges in New York. Conclusions, based on experiences with seven colleges during 1974-1977 and on comparisons with studies of GIS use in high schools and prison settings, include: (1) community colleges, in their first year of involvement with the system, got off to a slow start during the time in which the computer system was being integrated into the ongoing pattern of counseling activity; (2) use of the computer varied as a function of college characteristics and implementation strategies; (3) variations in the level of use were found among sites of a similar type; (4) settings differing in organizational complexity differed in regard to length of time needed to implement a computer system; and (5) the amount and pattern of use of the system varied substantially among different types of settings. It is also stressed that counselors played a major role in referring students to the computer, and also served to make students aware of the potential and limitations of the computerized information. The availability of the computer did not appear to have an impact on counselors' work load, nor on division of counselor responsibilities, although there were reports that the quality of counseling improved. (MB)

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A MODIFIED APPROACH TO IMPROVE THE USE OF A COMPUTERIZED INFORMATION DELIVERY SYSTEM IN TWO-YEAR COLLEGES IN NEW YORK STATE

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FOREWORD

Despite increased attention to career education in this decade, evidence continues to mount regarding lacks in the decision-making process as they relate to career choice. Increased options, coupled with higher student-to-counselor ratios, are certainly contributing factors; more choices and fewer competent people with whom to discuss related variables (values, life-style, etc.) frequently lead to inappropriate choices of a career.

An assumption of this project and several related ones was that modern technology, in this case a computer and appropriate programs, could contribute significantly toward the reduction of time and tedium in searching data required to make a well-informed choice. Both student and counselor could then devote more attention to the counseling process rather than the clerical, information-gathering process.

An additional assumption was that students in community colleges had needs similar to high school youth, albeit that they had already "made a career choice" by virtue of selecting a curriculum major prior to entering. Additional information, exposure to a curriculum only assumed to be satisfying, maturation which may contribute to changing values--these and other factors warrant occupational re-exploration by many community college students. Sometimes it results in a change of occupational choice, other times a focus on an option within the same field, and at still other times in the selection of an occupational field by those who could not opt for one prior to entering the community college (and chose, instead, to take a "safe" route by electing "liberal arts" until a decision could be made).

This document deals with IRDOE's third year of experience in implementing the program in community colleges. Evaluation of the first two years' effort resulted in certain suggestions designed to improve utilization. Reported herein are the results.

Lee Cohen, Ph.D.
Director, IRDOE

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A MODIFIED APPROACH TO IMPROVE THE USE OF A COMPUTERIZED INFORMATION DELIVERY SYSTEM IN TWO-YEAR COLLEGES IN NEW YORK STATE

INTRODUCTION

This project, demonstrating the use of computer-based information for occupational counseling at the community college level, was begun in four colleges in 1974-1975 with a grant from the New York State Education Department's Division of Occupational Education Supervision, Bureau of Two-Year College Programs,[1] and was expanded in 1975-1976 to five colleges.[2] A continuation was undertaken for the 1976-1977 year[3] for the purpose of trying out different strategies for modifying use of the computer system at the community college.

From the outset, CASE's Institute for Research and Development in Occupational Education (IRDOE)[4] was concerned with broad questions of feasibility and usefulness. Despite the widespread concern with providing community college students occupational information and counseling, and the perceived advantages of computerized data retrieval--notably, a quick and convenient method for students to obtain information on which to base decisions; and a way to free the counselor from the burden of being primarily an informational source--there were many issues raised early on: Would counselors use a computer? Would students benefit from the experience? And, would the information be of value?

In this report, an attempt will be made to unify the three-year experience, as well as to report the findings of this year's investigations. IRDOE feels that the project has been operative sufficiently long, and the assessment has been comprehensive enough to draw some generalized conclusions about computer-assisted counseling in community colleges in New York State.

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[1] See: B. R. Heller, A Demonstration of a Computerized Information Delivery System in Four Urban Community Colleges, September 1975, CASE #20-75.

[2] See: L. Chitayat, A. Jaffe, and B. R. Heller. A Continuation of a Demonstration of Computerized Occupational Information Dissemination in Four Urban Community Colleges, August 1976, CASE #38-76.

[3] VEA Grant #77-2-381.

[4] CASE, the Center for Advanced Study in Education, is a component of the Graduate School and University Center, the City University of New York.

PROJECT DESCRIPTION

Background

The results from the 1974-1975 year of the demonstration (hereafter, Year 1) were equivocal.[1] The four participants, all CUNY community colleges, used the computer system a total of 507 hours, or approximately two hours on each assigned day. In all, 635 different students used the system a total of 868 times. The degree of utilization by each participant college varied substantially: while one college accounted for approximately one-half the students using the computer, another college served less than five percent of the total number. The variability of use during Year 1 notwithstanding, feedback from students and counselors at all sites was extremely positive.

The project was continued in 1975-1976 (hereafter, Year 2) to determine whether positive attitudes would translate into increased (or more uniform) usage as the sites became more accustomed to the experience. Five CUNY community college sites were involved in the second year, including three colleges that participated in Year 1, and a new college (i.e., new to the demonstration); the fifth site was a Continuing Education Center of one of the participating colleges. Total usage in Year 2 increased by 93%; 1165 different students used the computer a total of 1786 times. Again, however, there were large site-to-site variations in use that seemed to be related to several factors. First, there appeared to be a first-year lag: both sites new to the project in Year 2 exhibited relatively low amounts of use, while the three colleges carried over showed dramatic increases from Year 1 to Year 2.

The amount of use also seemed to be related to the involvement of counselors, since most students found out about the computer through their counselors. Ways of stimulating counselor involvement remained a mysterious process. While some quickly became excited about the computer's capabilities, and frequently referred or brought students to the terminal, other counselors would never use it or rarely make referrals--despite professing very favorable attitudes.

During this current 1976-1977 year, Year 3, IRDOE intended to investigate some of the questions raised about computer use in relation

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[1] B. R. Heller, op. cit.

to counselor involvement. We also wanted to broaden the scope of the project to include at least one SUNY community college in order to assess whether the outcomes were unique to CUNY, or conversely, to what extent the findings could be generalized to other institutions. Five colleges participated in Year 3, three of which had been involved from the project's inception. A new CUNY and one new SUNY community college were added in 1976-1977.

During the span of three years, a total of seven different college sites participated in IRDOE's demonstration of computerized information delivery, using the Guidance Information System. Three colleges had been involved continuously for all three years, while four institutions participated for only one of the three years. The participant sites differed from one another in character and thrust, in the size of their counseling departments, in their emphasis on career and occupational education, and in the characteristics of their student populations.

Project Objectives

The modified project emphases are reflected in the objectives for the current year. Specifically, IRDOE proposed to:

1. Examine the relationship between counselor attitude towards the computer and the use made of this resource.
2. Overcome those aspects of counselor resistance related to insufficient exposure to the new technology by training counselors in one-to-one sessions, and by increasing their awareness of other computerized systems.
3. Examine any shift in counselor roles and/or departmental organization as a result of computer assistance.
4. Begin to delineate idiosyncratic CUNY responses with non-CUNY community college responses by comparing the introduction of the project at a new CUNY and a new non-CUNY community college.

To realize these objectives, IRDOE included the SUNY community college, and refocused the conduct of the demonstration. Project staff, in general, played a more active managerial role. A trained counselor was added whose main responsibilities included providing college counselors with direct, individual hands-on training in the use of the computerized system, and publishing a newsletter directed toward the staff of the counseling departments.

Target Population

As in the previous two years, priorities for student use of the computer system accorded with State Education Department policy. The computer resource would be available to all students. Use was to be encouraged, however, by the following groups in order of priority:

- Students enrolled in occupational programs desiring to change their curriculum or career focus within that curriculum;
- Students dissatisfied with their progress and/or curriculum who need additional career counseling;
- Student "drop-ins," including those in extension programs and evening programs, who are in need of retraining; and
- If time permitted, dissatisfied students in liberal arts programs, specifically identified by the counseling staff as needing career counseling.

Whereas the priorities were consistent from site to site, there were differences in how they translated into use, given the special characteristics and types of special programs of each college.

Participating Colleges

As noted, three of the colleges participating in 1976-1977 had been involved since the demonstration began in 1974-1975: Bronx Community College, La Guardia Community College, and Staten Island Community College. All three had sustained or increased their level of interest in and use of the computerized system from Year 1 to Year 2, and had renewed their commitment for the current period.

The demonstration project was expanded to two new sites--Queensborough Community College of the City University of New York, and Dutchess Community College, part of the State University of New York system. With these additions, IRDOE would be able to examine initial implementation problems and any differences that might occur between a CUNY and a non-CUNY school.

College A[1] is located "high on a hill," occupying a campus that was formerly a large private university. Its student population consists of approximately 10,000 students, almost all of whom are members of minority groups.

This year, major changes were made in the staffing and structure of

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[1]The colleges are coded A - E for ease of reference. Unfortunately, the same codes were used in years past but do not necessarily refer to the same colleges.

College A's Department of Student Development, reflecting the imposition of tuition at CUNY colleges. Although the Department members number more than 30, many counselors were reassigned from general to financial aid counseling in order to help students remain in school.

In addition, the Department's organization was altered: in past years a student was assigned to a particular counselor for his/her entire college career. This year only freshmen were assigned a counselor; other students saw any counselor who was available at the time, and not necessarily the same counselor they had seen at a previous time. Although a staff member retained special responsibility for Career Planning Services, the net effect of the Departmental reorganization on the computer project was that the burden of initiating a "career counseling" request had to originate with the student.

College B is a SUNY two-year college. It is located in the mid-Hudson Valley, approximately 50 miles from New York City. The total enrollment of full-time and part-time students approximates 5,000, mostly from a middle-class, white background.

The Student Personnel Administration staff includes one counselor each for career and placement services, for transfer activity, and for disabled students; two additional counselors provide psychological services. Academic advisement at College B is handled by faculty advisors to whom students are assigned.

College C, located in a white, middle-class neighborhood in New York City, enrolls approximately 16,000 students in its day and evening divisions. To accommodate its expansion, extensive construction and remodeling of buildings and grounds are being done.

New to the project this year, College C's Department of Student Personnel Services includes 16 counselors and a Director of Counseling. In addition, they had available the services of at least six CETA aides. During 1976-1977, the counseling staff was moved several times; at no time, however, were the computer project staff and equipment (see below, Location of Terminals) housed in the same location as the majority of counselors.

College D occupies several remodeled factory buildings in an industrial area of the City. Like College A, its student enrollment of approximately 5,000 is predominantly composed of minority group members.

Part of CUNY, it is the only unit that requires a cooperative-education experience for all students. With a grant from the Federal Office of Career Education, College D is developing a national model of a comprehensive approach to postsecondary career education. The computer project was a significant part of that concept, and an introduction to the Career Resource Center--which housed the terminal--was a mandatory aspect of the cooperative-education program.

There are 12 counselors, and a Director of Counseling who work in teams with cooperative-education advisors and with other faculty members. As freshmen and sophomores, all students meet regularly in small groups with these teams of professionals to discuss cooperative-education assignments and experiences as they relate to educational and career goals.

College E, in an outlying area of New York City, is more like a small suburban college than an in-city CUNY institution. Approximately 9,700 full-time and part-time students are enrolled in day and evening classes.

College E has participated in this demonstration since Year 1. Until 1976-1977, when it "federated" with a neighboring four-year CUNY college, it was an independent unit of the University system. As a result of the merger, the counseling (and other) departments were being restructured, and a number of key positions were held by "acting" personnel. Several staff changes in assignments affected the project operation in the early months. Including the Director of Counseling, the Department of Student Services has a staff of 28 counselors, 11 of whom were responsible for College Discovery Program students.

The agreement with the five colleges was that they would "staff the project adequately." This was to include professional staff supervision, leaving the actual distribution of project activities on a daily basis to the discretion of the colleges' administrations. In some cases (particularly in Colleges D and E), much of the day-to-day operation was handled by paraprofessionals or assistants; in other instances most duties were divided among the professional staff.

In the past each college was responsible for installing and maintaining a telephone (used to connect the teletypewriter terminal to the

computer). This year some telephone charges were absorbed by IRDOE as a result of the inequities in costs when five geographically dispersed sites share common telephone access numbers. Whereas two colleges were able to dial the access number and be charged for a local call, the other sites would be charged for message unit calls--and in one instances, for long distance rates. The problem was equalized with the installation of two foreign-exchange lines, the absorption of telephone installation costs for the new colleges (and for one continuing college), and payment of selected monthly telephone bills.

Description of the Guidance Information System

The Guidance Information System (GIS) is a computerized information retrieval system marketed nationally by Time Share Corporation (TSC), a subsidiary of Houghton Mifflin Company. It was designed for the use of students at a high school level, but based on our experience, appears to be useful for a more varied population as well. Since 1973, IRDOE has monitored GIS in diverse settings--high schools, community colleges, and correctional facilities.[1]

GIS contains four data files of information: an Occupational File, containing descriptions of more than 1,200 occupations, plus DOT[2] titles of numerous related occupations; a Two-Year College File containing information about approximately 1000 two-year colleges located throughout the United States; a Four-Year College File with information on approximately 1600 four-year colleges in the United States; and a file of information about national Scholarships and Financial Aid available to individual students meeting certain specified requirements (e.g., ethnicity or descent).

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[1] See: B. R. Heller, A Demonstration of a Computerized Information Delivery System in Four Urban Community Colleges, September 1975, CASE #20-75; L. Chitayat, A. Jaffe, and B. R. Heller, A Continuation of a Demonstration of Computerized Occupational Information Dissemination in Four Urban Community Colleges, August 1976, CASE #38-76; B. R. Heller and L. Chitayat, Computer-Assisted Guidance in New York City High Schools: A Demonstration of Feasibility and Impact on Students, November 1976, CASE #41-76; and B. R. Heller and L. Chitayat Gross, Computerized Vocational Information and Decision-Making in Secured Environments in New York State, July 1977, CASE #09-77.

[2] Dictionary of Occupational Titles.

To access the data files the user sits at a teletypewriter terminal which is "coupled" to the central computer by means of a telephone line. Requests for information are typed at the keyboard as are the computer's responses. Instructions for accessing the computer (as well as other suggestions) are included in the User Manual. The Student Guide, available in multiple copies, contains all commands needed to operate the system (i.e., the types of questions that can be asked), and the codes for the nature of the information requested (i.e., for the content on the basis of which occupations and colleges are classified).

The different approaches to using the Guidance Information System have been described in great detail in IRDOE's reports for Year 1 and 2 of the demonstration.[1] To summarize briefly, GIS can be used directly by a student or in his/her presence (defined as "direct" use), or in the student's absence. This latter situation, "batched" use, means that the terminal operator must have available--usually in writing--the specific information the individual student is asking for. Although GIS was designed for direct interaction, "batching" is frequently done for several reasons, including students' failure to keep appointments and computer access schedules that do not accord with students' schedules. The significant difference between batched and direct use is that the latter mode permits the student immediate feedback and thus, the immediate opportunity to modify his/her request.

The request for information can take two forms--descriptions or searches. To obtain a description of a prespecified occupation or college, the user needs only its identifying number (listed, if included in GIS at all, in the User Manual). To conduct a search, the user makes use of the different content characteristics and narrows the data base by instructing the computer to find the occupations (or colleges) that meet the characteristics. This mode exposes the user to GIS' decision-making or narrowing logic.

Although flexible, GIS does not meet all the needs of the community college student: it does not match training opportunities with the educational requirements of occupations; it does not describe courses within an area of specialization; it does not include several occupational

[1] See: B. R. Heller; L. Chitayat, A. Jaffe, and B. R. Heller, op. cit.

areas that students are interested in (none that require bilingual or multilingual ability and few occupations in emerging fields--paramedics, paralegals); it is nationally, not regionally, based; and it is not detailed enough for students with some postsecondary education. Nonetheless, GIS has proven to be of sufficient value to large numbers of students.

Evaluation

With minor changes, IRDOE retained the same evaluative techniques and instruments as were used in Years 1 and 2 to provide a common basis for examination of outcomes over time, as well as to permit the identification of similar and dissimilar patterns in the experiences of all colleges that have been a part of this demonstration. The analyses of the findings and the stress on selected data reflect concern with the nature of the intent of the activities in Year 3.

A total of 67 person-days of visits were made to the five colleges. The major purpose of most visits was for training and orienting counselors, but the project staff was instructed to take note of other particular things. Observation reports were filed within one or two days of each visit. These visits were extremely important for obtaining first-hand information on the nature of the recruitment, scheduling, and followup procedures being used; for observing day-to-day staff activities; and for gleaning informal reactions and comments from students and staff.

All data on the amount of time spent on-line (i.e., accessing the computer banks), and about users was obtained through automated transcripts of each college's interactions with the computer. These transcripts provide second-by-second accounts of what computer requests were made. To make this record usable, we requested that each user be identified at the beginning of his/her session at the computer by having his/her name, semester, curriculum, and presence or absence at the terminal typed directly on the terminal. The terminal sign-in procedure also called for noting how each student heard about (i.e., how (s)he was referred to) the computer.

As in previous years, the terminal sign-in procedure was both an effective and an ineffective technique for data collection. From the

point of view of college staff, it is a convenient procedure that eliminates the need to maintain manual records. From an evaluation point of view, however, its adequacy depends on the rigor with which terminal operators type in this information--how consistently, completely, and coherently. That this is often difficult to do when the terminal operator's mind is on the student's request is reflected in how completely it was done: some colleges complied very well, and others' data is, unfortunately, less accurate.

In Year 3, IRDOE abandoned "Hardware Malfunction" forms and instructed the colleges to telephone us in cases of hardware difficulties. All problems were marked on a central calendar so that a summary of the extent of malfunctions could be made. We are certain that we were informed of all serious problems, although colleges differed in whether or not they reported some of the more moderate ones (e.g., those where output may have been difficult to read, but where the system was still usable) or ones they could repair themselves.

To gauge counselors' awareness of and attitude towards the computer project, a Community College Counselor Questionnaire was mailed to members of the counseling staffs in December 1976. There were two versions, one for Colleges A, D, and E--those continuing in the demonstration--and a slightly different one for Colleges B and C. In May, at the end of the year, a followup questionnaire was sent to counselors to ascertain the effects of hands-on training on counselor attitudes. Forty questionnaires were returned from the first administration, and 27 were completed in May 1977. Copies of these questionnaires are appended. (See Appendix A.)

A lengthy end-of-year Community College Coordinator's Questionnaire was sent to the coordinator at each college. (See Appendix A.) This instrument included questions about all aspects of project implementation; the effects of the computer on the college and college staff; and the effects of the computer experience on students. All coordinators completed this questionnaire, often with the input of other project staff at the colleges.

A User Questionnaire (Appendix A) was developed to elicit from student users their perceptions of what they gained, and their general reaction to the computer experience. Copies of these questionnaires

were left at the terminal, and users invited to complete them. A total of 151 students, all colleges combined, did so.

Results will not be described by instrument; rather, the findings will be presented topically.

IMPLEMENTATION

This section describes start-up in Year 3, time schedules and staffing, and student recruitment. The following section summarizes outreach to counselors.

Project Start-Up

Some anticipated and several unanticipated problems delayed the start of operations this year. All sites were affected by the United Parcel Service strike, and materials (Student Guides, User Manuals, and teletypewriter terminal paper) had to be hand-delivered by TSC. In addition, new tuition regulations at CUNY, influencing all aspects of CUNY's colleges' operation in September 1976, were particularly noticeable at Colleges A and D where counseling staff was mobilized to expedite the processing of financial aid applications and questions. Consequently, in two of the three colleges that participated in Years 1 and 2, counselors were not free enough to devote time to the computer project until late September (College D) or early October (College A).

College E experienced a more serious delay caused by a problem left over from the fiscal crisis in 1975-1976. The telephone that they used to dial into the computer was inadvertently disconnected just prior to the CUNY shutdown in June 1976, and was not reinstalled when the College reopened. At the start of this academic year, consolidations and alterations brought about by the merger of College E resulted in delays in obtaining administrative approval for the installation of the telephone. Telephone access was not established until November 1976. The two Colleges, B and C, new to the project this year, actually experienced less severe problems than the experienced colleges, but ones that were characteristic of start-up operations in previous years.

Early in September IRDOE staff spoke with representatives from College C to discuss their participation in the project. From the first contact, the administration proved very enthusiastic and an

exploratory demonstration was arranged with four counselors at the beginning of October; at the same time, arrangements proceeded for the installation of the terminal and telephone, and delivery of supplies. A formal training session was held at the campus in mid-October and was attended by approximately ten people, including the counselor who would coordinate the project and several CETA staff.

The selection of a SUNY community college was coordinated, in part, with the choice of an upstate correctional facility to participate in IRDOE's companion project.[1] An attempt was made to locate a college and a prison geographically contiguous so that only one foreign-exchange line need be installed to give each access to the computer system at a reasonable cost.

This could be accomplished with the participation of College B, and on approaching its administration it turned out they were very eager to become involved. Terminals and supplies were delivered to College B by mid-October, and the telephone was installed by the end of the month. Training took place in early November: the counselor who would coordinate the project and the supervisor of the Computer Assisted Instruction (CAI) Center attended. Unfortunately, at this session a mechanical problem with the terminal developed, necessitating IRDOE staff to "talk-through" the operating instructions. However, the CAI supervisor had no difficulty translating verbal instruction into use once the terminal was repaired.

Formal training sessions were scheduled only at Colleges B and C, but IRDOE staff visited all colleges at the very beginning of the year to discuss current objectives and priorities. We also trained paraprofessionals at Colleges E and A at various times throughout the year. Furthermore, an orientation for College Discovery staff was held in January at the request of College E's counseling department; two sessions for College D's cooperative-education coordinators were arranged; and a demonstration for selected faculty of College B took place in April 1977.

IRDOE's three-year experience with training professional and paraprofessional staff in the operation of the computer system indicated

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[1] See B. R. Heller and L. Chitayat Gross, op. cit.

considerable unevenness in the length of time needed to become proficient. All persons trained at the new colleges this year understood GIS' logic within a few hours of practice following the initial demonstration. A few persons this year, and in previous years, however, required several training sessions interspersed with individual practice to attain command of the system. In a very few cases where an individual never completely understood the program logic, the operation of the terminal was either turned over to, or shared with, others who were more proficient.

Staffing and Location of Terminal

As has been mentioned previously, a condition of participation was that each college adequately staff the project. It was also the colleges' responsibility to find space for the equipment. Staffing implied some professional supervision, with the actual allocation and division of day-to-day responsibilities left to each college's discretion. Over the three-year course of this demonstration different staffing patterns were implemented, providing some clear indication of elements that are necessary for an effective operation.

Similarly, the location of the teletypewriter terminal often plays a significant role: an optimal location combines visibility to students and easy access by counselors and students. Ideally, the terminal (which is fairly noisy) should not interfere with nearby activities.

After Year 1 when College A's terminal was moved from the Career Library in the Student Services building to a separate, adjacent room, it remained there for two years in close proximity to the majority of counselors. The move lessened the noise disruption, yet kept the terminal close enough to the Career Library so that students needing career information could be sent next door. The move also facilitated the use of student aides--several of whom worked in the Library and helped operate the terminal during this Spring semester.

At College A, the same counselor served as project coordinator in all years. She devoted approximately 5% to 10% of her work time to the computer program this year, supervising activities, operating the terminal, providing followup to students, and keeping records. She was assisted by a CETA employee who spent approximately 20% of her time on this project, primarily with the terminal operation, and student

orientation and recordkeeping.

College B, in effect, divided supervisory responsibilities between two individuals, one of whom was the transfer counselor, and the other the supervisor of the CAI Center, where the terminal was located. The CAI Center and the Student Services Department were in separate buildings, resulting in students having to travel back and forth from one to another building. Moreover, the fact that the computerized information terminal was surrounded by approximately 15 other terminals used for remediation and instruction decreased its visibility and uniqueness. Although these difficulties led staff to consider an alternative "home" for the terminal, no better location was found in the course of this year.

The location of the terminal also meant a coordinated division of responsibility. The counselor-coordinator was charged with recruitment and publicity and with explaining the computer's capabilities to students; she estimated that she devoted approximately 5% of her time to these activities. The CAI supervisor said he spent approximately 10% of his time on the project, personally operating the terminal for students and overseeing the CAI Center's student aides who helped in this regard.

College C placed its terminal in a remote location--in the basement of an off-campus house used by the college--but kept the entire operation more centralized. The project coordinator was a counselor in the Department of Student Personnel Services, who also supervised tutoring and College Discovery activities (also housed in that off-campus building). With the aid of four CETA's in the Fall and two in the Spring, the coordinator involved himself in all aspects of the operation--from recruitment to running the terminal--estimating that he spent approximately 20% of his time on this project.

Midway through the year, the coordinator's office--but not the terminal--at College C was moved from the off-campus site to one of the college Buildings. The fact that the terminal was so far away from most students and staff made the coordinator even more diligent about publicizing the project and overseeing all its aspects.

College D again placed its terminal in its Career Resource Center, which houses reference works and many other career resources. The Center is in a usually heavily trafficked area, slthough due to this

year's construction the Center lost some visibility. Day-to-day responsibility for the computer project was assigned to the coordinator of the Career Resource Center. The coordinator was assisted by work-study students and interns who staff the Center. Overall supervision of all Career Resource Center activities was exercised by the College's Assistant Dean of Student Services.

College E reassigned the previous year's coordinator, and kept the terminal in a small storeroom that was part of a large suite housing many counselors. The coordinator's involvement in the computer project this year was minimal--accounting for an estimated 2.5% of his work time--and largely supervisory. Almost all of the operation was undertaken by a part-time assistant, aided by a student.

Different as they were, these diverse staffing and terminal location configurations proved, in general, satisfactory--given the fact that there was no official released time. At all colleges this year, the coordinators were interested in the project, and their responsibilities were well-delineated. There were, furthermore, few changes in staffing during the year and the roles of those involved were complementary, not fragmented. These factors appear to comprise important elements that facilitate a smooth operation. In Years 1 and 2, at sites where one or more of these elements were lacking, the negative effects on usage were observable.

Time Schedule

As in years past, IRDOE leased from TSC two full-time access ports to the computer--or, as it translates into use, access telephone numbers. Each port is available 22½ hours a day, seven days per week; thus, there are 14 "days" a week of time available on the two ports. Access time was shared by the participating collegs: each was asked which two weekdays would be most useful for them, and IRDOE developed a master schedule reflecting their requests to the greatest extent possible. The same two days a week were assigned to a college (for example, College E was given Mondays and Thursdays on one line, while another site used the same days on the other telephone line).

If a college wanted time on the computer on a (week) day for which they were not scheduled, this could usually be arranged: the college

called IRDOE and was either assigned an idle access number,[1] or a trade was arranged with a college that was scheduled for that day. The colleges were informed that weekend time was virtually guaranteed (since most sites make very little use of Saturdays or Sundays). This year, no use was made of weekends, although in previous years, some small amount was used for special events.

Overall, leasing and sharing time is a very adequate arrangement for providing colleges with enough time for student and other types of use, and fairly adequate in providing them the right time. All but two of the coordinators at the seven colleges that participated in this demonstration indicated that the shared schedule provided ample time on the computer, and on the days that they could use to best advantage. College C's coordinator, however, indicated that three days of computer access instead of two would have been welcomed. The other exception was College D: for them, two days a week was adequate for the first two years, but recent increased efforts in community career education would have made exclusive (i.e., five days a week) access desirable. An additional point made by College D staff was that when students drop into the Center for career information, an aide may be more likely to ignore the computer and refer them to books instead if that aide had had prior experience with not being able to "get on-line" immediately because it was not their scheduled day. Although appointments to use the computer can be (and often are) prescheduled, the aides can get into the habit of relying on those resources that are always available.

A "test" of what usage patterns would result when a college had exclusive access was possible this year due to delays in implementation in the correctional facility which was to share College B's phone line. Before the middle of February the college was scheduled for and used two days of time (plus two "extra" days); from mid-February on, College B had unrestricted access to GIS. The new situation led them to use the system several days a week. (Half the days used from mid-February through June were on days other than their two originally scheduled ones.) This situation did not, however, increase their total usage. With more

[1] More flexibility was available because IRDOE also had a similar shared-access arrangement in the prisons and detention centers, and occasionally, extra time was available on their access number(s).

days, the average time on-line per day decreased from one hour to approximately 40 minutes--a 33% decrease.

This confirms IRDOE's previous experiences--when a site has more days available, a greater number are used, but the amount of time used each day declines so that the total time remains constant.

It is appatent, then, that particularly when "walk-ins" are a significant part of the clientele, exclusive access to GIS is most desirable. Given the costs of exclusive use and the fact that colleges seemed to have a sufficient amount of time on the two-day-per-week schedule,[1] the shared system is a more effective arrangement.

Student Recruitment, Orientation, and Followup

How do students find out about the computer and arrange for its use? Who assists them in requesting information and interpreting the output? Although there were modifications, the procedures established by Colleges A, D, and E over a course of years were continued at those sites. Thus, at College A, the computer experience retained a solid counseling flavor, with students scheduled for hour-long appointments at the terminal, and given strong encouragement to return to a counselor to discuss their plans. College D, to a greater extent than in previous years, integrated the computer in its centralized Career Resource Center, which had an established reputation and recognized function among staff and students: students go to the Center as a class or individually, are aided by the Center's staff, and are encouraged to seek out counselors for additional help. College E continued their vigorous publicity, replacing last year's familiar "Snoopy" campaign with "Winnie the Pooh" posters. (See Appendix B.) The staff also relies on counselor referrals, and has one counselor who personally uses the computer with most of his students. More detailed descriptions of operations at Colleges A, D, and E can found in previous years' reports.[2]

The procedures at College B were somewhat unique to that college, but in other ways similar to colleges in the first year of involvement in the computer-aided counseling project. Unlike any previous participant,

[1] Extra days asked for and used ranged from one at College C to 10 at College D.

[2] Colleges coded A, D, and E in Years 2 and 3 were coded Colleges A, C, and D, respectively in Year 1.

College B placed their computer terminal in a building far away from where the College's counselors were, causing more serious need for coordination than other sites experienced: it became necessary for the computer operator to refer students back to their counselor with all content-related questions. Although referrals back to counselors also obtained at other sites, this was the only instance where no career information existed in the area where the terminal was operated.

Recruitment of students at College B proceeded in several ways. Ads about the computer were placed in the College newspaper, posters were put up around the campus, the College radio station publicized the operation, and faculty and counselors were informed about the project. On a day early in the project year, the terminal was moved to a central location for a special college-wide conference; this, according to the coordinators, made many more students aware of the computer's availability.

Despite the variety of recruitment techniques, College B moved cautiously. The coordinators were somewhat concerned that they would be inundated with more requests than they could handle, or requests from more students than could profit from use of the system. This is a usual first-year concern encountered at other colleges; it changes in subsequent years as procedures for handling student users become routine, and when more paraprofessional time becomes available.

The fact that College C's computer terminal was also in a separate building (adjacent to but not on the campus) increased the project coordinators' responsibility for recruitment and publicity. Posters and newspaper articles were used to publicize the project, but the most concerted effort was to inform counselors of its potential as well as where and when the computer would be available to students. Periodically, the coordinator sent notices to counselors (see Appendix B). The success of this type of counselor contact for referrals is reflected in the fact that College C had the greatest proportion of student users who had found out about the computer through their counselor (see Table 6, page 38).

The coordinator at College C estimated that approximately two-thirds of students scheduled for appointments with the computer kept them. This is consistent with reports from other colleges in previous years, where

the proportion of students who kept appointments ranged from 60%-75%. At College C, students were not generally given the Student Guide to review before they came to the terminal, because the coordinator indicated it would confuse them: students could misinterpret the descriptive characteristics that they could ask about (which is quite easy to do given the nature of the Student Guide), and time would be wasted in re-explaining the system to them. Instead, at College C, whoever was operating the terminal (usually the coordinator or one of the CETA aides) would go through the Student Guide with the student at the time of use.

The similarities in the way certain aspects of the computer project were implemented at the various sites--both this year and in Years 1 and 2--are striking. With respect to the location of the terminal, compromises were made between a highly visible area and one where the operation would be least disruptive. In terms of staff, every college that made more than token use of the system had an interested, committed, and stable group of people assuming project functions, although how they divided their responsibilities varied. Recruitment of students, in every instance, depended on the involvement of counselors--at least to the extent of referring students who could benefit from the experience.

In general, colleges new to the demonstration, like College B in Year 3, are somewhat reluctant to publicize the availability of the computer, apprehensive that student demand will outstrip the availability of staff. This did not seem characteristic of College C, however, which was a new participant this year.

Moreover, there does not appear to be a noticeable difference in implementation that can be attributed to CUNY or non-CUNY affiliation. College B's operation closely resembled that of the other CUNY colleges in the demonstration with the exception that the comparatively small campus atmosphere may have permitted the close cooperation between the College's CAI and counseling department--this kind of collaboration was not usually seen in CUNY settings.

COUNSELOR OUTREACH

Evidence from Year 1 and Year 2 clearly indicated that the amount and quality of use of a computerized information retrieval system was in direct proportion to the extent of counselor involvement, either directly

with students at the terminal, or indirectly through referrals. Despite the fact that enthusiasm and interest was always positively evidenced at introductory demonstrations, and staff reactions remained favorable throughout each year, there were marked differences in the number of referrals made by different counselors. These differences were, we hypothesized, a function of counselors' perceptions and understanding of the computer system.

The project coordinator at each college carried a full load of administrative and counseling responsibilities and received no released time for activities related to the computer project (including launching recruitment drives, scheduling appointments, and supervising paraprofessionals or student aides.) Thus, it was not to be expected that (s)he could also meet with other counselors to provide substantive and detailed instruction in the kinds of information contained in GIS, the techniques of retrieving the information, or ways of maximizing use and effectiveness. For 1976-1977, a counselor familiar with both the community college setting and computer-assisted counseling was added to IRDOE's project staff to provide individual service and training to counseling staff at the project schools.

On the basis of two years of prior experience, and a search of the relevant literature, it was apparent that a special effort was needed to help make counselors and other staff members feel comfortable with a technical aid and to explore how a computerized system could be used to complement their approach to counseling. The project counselor was introduced, therefore, in an attempt to overcome resistances resulting from insufficient exposure to the system and to maximize the likelihood that counseling staffs would respond with more referrals.

To reach counselors, two major approaches were adopted: publicity (consisting of a colloquium and a newsletter, ON LINE, targeted primarily at counselors); and individual hands-on training at the terminal. By personalizing their experience with computer-assisted information delivery systems, we anticipated--in the long run--an increase in counselor referrals and an improvement in student use of the computerized system. For the current year, we expected that counselors would: (1) learn to evaluate computer-aided counseling as a method of acquiring occupational or college information; (2) become increasingly aware of

and perhaps examine their attitudes about whether the computer is "dehumanizing"; (3) learn how to operate the terminal and, therefore, become more comfortable with the technology; and, (4) become more sophisticated in accepting or rejecting parts of computer-aided counseling, so as not to "throw the baby out with the bathwater."

Counselor-Directed Publicity

The newsletter and colloquium were designed to provide support and reinforcement through formal and regular communication, and broaden knowledge about GIS and other systems. The colloquium (see Appendix C) was held in March 1977 at CASE-IRDOE. Approximately 40 people attended, including representatives from the five participating community colleges and from other CUNY two-year and four-year institutions. In addition, supervisors and administrators from correctional institutions were present, and included on the panel. Although the colloquium was successful to the extent of stimulating thinking and exchanging ideas and solutions to problems, it did not reach the harder-to-reach counselor.

The newsletter, ON LINE, was published in September and November 1976, and in February, April, and June 1977. (See Appendix C.) As a stimulus, each issue opened with a quotation by a well-known educator. Usually included was an "Interesting Reading" column; a counselor case study; a column reporting on ongoing activities of the project, such as responses to questionnaires or surveys, or procedures for data collection; and an "Important Dates" column to inform readers about seminars or workshops on computer-assisted information retrieval systems. One issue (April 1977) dealt exclusively with comparisons between GIS and the Occupational Outlook Handbook, SIGI (System of Interactive Guidance Information), CVIS (Computerized Vocational Information System), and a Computer-Based Equal Opportunities Center.

Approximately 100 copies of each issue were distributed to the colleges by IRDOE staff working through the college coordinators. Copies were placed in the mailboxes of administrators and all staff in the student personnel departments, and also sent to selected other faculty (such as cooperative-education coordinators). In addition to distribution with the five colleges, ON LINE was sent to several New York City and New York State Department of Education agencies and bureaus and to the liaisons at the correctional institutions. All requests for copies were filled.

Despite frequent suggestions in each issue that readers call IRDOE for more information, such formal feedback was rare. Informal feedback, however, was much more common: during visits to the colleges IRDOE staff were complimented on the content and were told that "I read the newsletter," or "I liked the case study." Several counselors volunteered to write articles and others suggested topics.

A considerable amount of staff time was devoted to putting each issue together. When possible, we selected contributors from the field and addressed ourselves to the concerns voiced by counselors. ON LINE was well-received, and greatly contributed to the project's visibility. The direct effect of increasing counselor interest in and awareness of computer-aided counseling systems was met. There is less evidence that this technique increased counselor referral of students.

Hands-On Training

Individual counselor hands-on training was designed to offer a personalized and more meaningful experience with computers--an experience hypothesized to improve counselor perceptions and interest, and one that could not be provided by the college coordinators. In addition to the regular group training and orientation sessions, individual training opportunities at the terminal were presented to counselors, administrators, cooperative-education coordinators, faculty, student aides, or other interested persons whose duties touched on the occupational development of students.

We proceeded by initiating a "softsell" approach. In the first issue of the newsletter (September 1976), two columns were addressed to informing counselors that an IRDOE staff member would be contacting them to solicit their advice and suggestions for making the most effective use of the system and to provide individualized experience in using the computer.

Concurrent with distribution of the first newsletter, IRDOE contacted the Dean, Assistant Dean of Students, or Director of Counseling to obtain clearance to work with counselors. In granting official approval, they supplied us with the names and campus addresses of the full-time and part-time counseling staff. At first we thought that it would be possible to visit a campus on an on-line day and find counselors who had some free time to devote to hands-on training. It quickly

became apparent that this approach would not work because of pre-scheduled student use of the terminal and counselors' other responsibilities. We then designed an appointment system which seemed to work effectively, with the least amount of disturbance to both counselors' and students' schedules. In addition to appointments, informal visits were made to counselors in their offices for the purpose of arousing and assessing their attitudes towards, interest in, and familiarity with computer-assisted counseling. We explained our goals, raised and answered their questions, left them a copy of a Student Guide, and made or confirmed an appointment for a hands-on training session.

In a typical session, a counselor (in one or two instances, the counselor indicated (s)he would like another counselor present) and the trainer would meet at the terminal on the appointed day and hour. At one school it was never necessary to remind a counselor of his/her appointment, and at other colleges it proved to be a necessary step. A session lasted from approximately 45 minutes to one and one-half hours. Over the course of the year, a total of 59 counselors received individual hands-on training.

Counselors were encouraged to bring "hypothetical" or specific problems to the session, so that its meaning might be more real and concrete. The session began with an explanation of how to access the computer (dialing the specially assigned telephone number, coupling, and typing-in the code identifying an authorized user). At this point, when contact was made with the computer and the computer responded with "which file?", there was almost always a heightened interest and sense of "this is going to be fun." The "magical lure" of the computer had begun. The counselor selected the file they wanted to explore--either an area with which they were involved with students (i.e., vocational or transfer counseling) or a more personal one, such as obtaining information for a friend, or relative, or for themselves. (Regardless of which file they began with, however, we also demonstrated the kinds of information available from the other files.)

Training consisted of practice with the machine commands or instructions and an explanation of GIS' decision-making capability. By using the various commands and operating the terminal her/himself, the counselor was able to observe, firsthand, the potentials and limitations of the computer retrieval system.

As the information was obtained, the counselor became involved in assessing its quality and recency by comparing it with facts (s)he already knew. For example, one counselor had just returned from a meeting where he had learned about the new provisions of a federal source of financial aid. The information in the GIS Scholarship File had not been updated to conform to the new provisions, and the counselor did not rate the GIS information highly on this point. At the same time, however, he observed that GIS did provide the students with an agency to contact for more up-to-date information. Other cases could be cited where the information obtained from GIS was more accurate--when checked against a third source--than that of the counselor.

Other important aspects covered in the individual training sessions included diffusing "machine anxiety"--once counselors learned how easily an error was corrected and/or how difficult it was to "hurt the terminal," much of their tension vanished. Moreover, in becoming familiar with the content and organization of the Student Guide and User Manual, they were engaged in a mini-refresher course in occupational counseling. A serendipitous effect of the hands-on training was an expansion of counselors' "occupational consciousness."

In addition, these sessions provided IRDOE an opportunity to reinforce the importance of the terminal sign-in procedure (our basic source of monitoring data), to suggest techniques for working with students, and clarify the procedures established by the college coordinator for referring and following up individuals and groups of students. Overall, these sessions were productive. As we will present in the section of the report describing the results, more counselors referred students and were better prepared to help users interpret the computer output as a result. The coordinator at College D reported that students who were referred by counselors had a clearer understanding of what the computer could and could not do for them.

There were problems with hands-on training, but few directly related to the concept of computerized information retrieval. Most involved coordinating counselor time with free computer time--at various times during the year, counselors were unavailable, having been reassigned to other duties relating to tuition regulations and budget cutbacks at CUNY which affected the staffing of the department. There were one or two instances of resistance so extreme that, as an example, one counselor at

College A scheduled and broke three appointments before she told us she was "scared to death of machines." On the other hand, a counselor at College B who was fairly knowledgeable (and negative) about computer-aided counseling systems (although he had never personally operated one) indicated that he might try it himself; and, after the session, he agreed that indeed there might be some use for these systems after all.

General effects on counselors--both behavioral and attitudinal--will be summarized in the following section on Results, together with data on the extent of use of the Guidance Information System.

RESULTS

Hardware Malfunctions

A discussion of the feasibility of an information-based computer aid for occupational counseling must begin with an assessment of how well the system works from a technical point of view. In previous years, the hardware components (phones, terminals, and the central computer) presented a minimal problem. The terminals and central computer were reliable, and Time Share Corporation was quite prompt in responding to mechanical breakdowns. Both TSC's and Data Access System's[1] service was rated by the colleges, each year, as from "very good" to "excellent."

Although hardware malfunctions did not present an enormous problem this year, there were more than the usual disturbances. Difficulties in accessing the computer were reported on 53 college-days.[2] While not in itself an unusually high number when compared with previous years, the problems were more frequently of long duration, such as failures in the central computer or in phone lines. This year, approximately half the mechanical difficulties were of these types.

It should be added that the problems affected one college disproportionately more than the others--most of the reports of major mechanical difficulties came from College A. Part of the reason was a fault in their actual telephone instrument that was not discovered for quite some time,

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[1] Data Access Systems, Inc. was the teletypewriter vendor, responsible for maintenance of the terminal and coupler.

[2] This is somewhat inflated; if, for example, the central computer was "down," this affected two colleges' use of GIS, and was counted as two college-days of mechanical problems.

and not before many repairs and exchanges of terminals were made. Unfortunately, many students' appointments were cancelled, and students--as well as the project staff--became very upset.

An unanticipated source of difficulty came about in early June as a result of TSC's conversion to a new type of communications network system. The switchover, though well-planned, involved new and more complicated methods for accessing the Guidance Information System. Moreover, it took several weeks to "work out the bugs" in the network. The effects on colleges' use of the computer is difficult to determine, since usage in the month of June is relatively slow. Although the changeover had a significantly large negative effect in the correctional facilities, the community colleges were-by and large--much more experienced and confident in dealing with technical problems.

Use of the Computerized Information System

This section summarizes use of the computerized information system in Year 3--the amount of time used, the number of students who obtained information from the computer once and more than once, and the characteristics of use. The emphasis is on integrating the current year's data with that of previous years. In an attempt to overview the experience, we will present three-year data for Colleges A, D, and E, and describe those patterns that appear to be a function of length of involvement in the project.

Amount of Time Used. Table 1 (page 27) presents, for each college for each month, the total amount of time spent on-line to the computer. As can be seen, College D used the most time (171:25 hours), followed in order by Colleges C, A, and E.[1] College B utilized very many fewer hours, somewhat less than 47 hours, in the period from mid-October through June. In this respect, College B exhibited the "start-up" phenomenon, noted in Year 2: that is, colleges in their first year in the demonstration make less use of the computer than colleges with prior experience. However, when one examines the data for College C--also a first year participant--it is apparent that they used as much or more computer time than "veteran" Colleges A and E.

[1] Use at College E would probably have been greater had the start of operations not been delayed until November as a result of re-installing the telephone.

TABLE 1

TOTAL TIME COLLEGES USED THE COMPUTERIZED GUIDANCE SYSTEM, 1976-1977, BY MONTH[a]

Month	College					All Colleges
	A	B	C	D	E	
September	-	-	-	3:25	-	3:25
October	14:25	-	8:45	32:25	-	55:35
November	20:05	10:30	37:15	13:55	20:00	101:45
December	14:40	3:35	20:10	4:35	19:45	62:45
January	11:40	4:15	17:50	21:50	9:40	65:15
February	15:45	9:20	12:00	25:15	17:15	79:35
March	23:05	5:15	24:35	11:45	32:50	97:30
April	15:45	7:10	10:40	22:40	10:00	66:15
May	14:00	4:00	10:45	24:40	14:10	67:35
June	6:40	2:35	0:00	10:55	5:20	25:30
TOTAL	136:10	46:40	142:00	171:25	129:00	625:10

[a]Time rounded to the nearest five minutes.

College B, with a total of five counselors, has the smallest counseling department of any participant (compare College B, for example, with College D which has approximately the same enrollment, but almost three times as many counselors). From our knowledge of the importance of counselor referral in stimulating use, it is probably that in addition to--or in lieu of--interpreting College B's usage in terms of start-up inertia, the size of their counseling department must be also be considered.

From Table 1 it can be seen that November and March were the peak months of use for all colleges combined, although there was variation from site to site; for example, at College B, more use was made in February. In examining patterns of peak usage from 1974, it seems fairly clear that September and June are very slow months, due to such things as registration and graduation, while the months of October, November, and March are usually those of greatest activity. In the past, this pattern obtained at College E as well, making the fact that they could not use the computer during October 1976 most significant in terms of their total time on-line this year.

Table 2 summarizes the total time used by Colleges A, D, and E from

September through May in Years 1, 2, and 3.[1] Over all periods combined, the total amount of time that the computer system was used varied from approximately 430 hours (College D) to 500 hours (College A). The year-to-year pattern of total time used increased from Year 1 to Year 2, and then leveled off in Year 3. Fluctuation with leveling off is consistent with the usage IRDOE found in the high school project.[2]

TABLE 2

TOTAL TIME USED BY THREE COLLEGES IN EACH OF THREE DEMONSTRATION PERIODS[a]

PERIOD[b] September-May	Colleges			All Three Colleges
	A	D	E	
1974-1975	149:45	119:45	167:15	436:45
1975-1976	220:15	150:15	143:30	514:00
1976-1977	129:30	160:30	123:30[c]	413:30
TOTAL	499:30	430:30	434:15	1364:15

[a]Time is rounded to the nearest 15 minutes.

[b]June was omitted in each period due to the CUNY shut-down in June 1976.

[c]College E's time is an underestimate; two months were lost due to telephone difficulties in September and October 1976.

Two of the individual colleges differed with respect to the general pattern: College D increased usage (as measured by time) from Year 1 to Year 3, while College E (compensating for October 1976) steadily decreased usage from Year 1 to Year 3.

The average amount of time per day each college used GIS this year ranged from approximately 50 minutes (College B) to approximately 2:30 hours at College C. For all colleges combined, the average daily time approximated 2 hours. Similar outcomes were found in previous years: there were differences varying from 45 minutes (Site B, Year 2) to 3:50 hours (College A, Year 2). Two hours per day--if the hardware is in working order--appears to be a consistent average. With the exception of College B this year, lesser amounts of average daily use are one

[1]June data was not included in any period since the CUNY shutdown in June 1976 (Year 2) precluded use for half the month.

[2]B. R. Heller and L. Chitayat, op. cit.

indication of staff interest and involvement in the project. College B is a special case this year in that, as noted previously, they had five days a week access to the computer from the middle of February. This type of access resulted in a significant change in their rate of daily use: daily use decreased as the number of days used increased.

Sites differ from one another in purposes for which computer time is used. Some, for example, devote almost all on-line time to fulfilling students' requests for information. At other colleges relatively substantial amounts of time are used by counselors seeking out information for their own use, for demonstrations for visitors from outside the college, and for training terminal operators. Table 3 indicates the proportion of computer time used for student and non-student functions this year, as well as the amount of "unknown" time--time that was used without appropriate sign-in identification.[1]

TABLE 3

PROPORTION OF COMPUTER TIME SPENT FOR STUDENT USE, NON-STUDENT USE, AND FOR UNKNOWN USE, BY COLLEGE, SEPTEMBER 1976-JUNE 1977
(Figures in Percentages)

Time Used For:	College					All Colleges
	A	B	C	D	E	
Student Use	81%	83%	59%	86%	78%	77%
Non-Student Use	18	12	36	12	19	20
Unknown Use	1	5	5	2	3	3
Total Time[a]	136:10	46:40	142:00	171:25	129:00	625:10

[a]Time is rounded to nearest 5 minutes.

It is evident from inspection of Table 3 that at all colleges most time was allotted to processing students' requests for information from the computer. Again, this is consistent with the results of previous years. College C devoted the greatest amount of time, as compared with

[1]Not all time for which there was no sign-in data was classified as "unknown." In some cases, the coordinators were able to identify what the use was for, and estimate (if applicable) how many students used the computer; this occurred with particular frequency at College D, where sign-in information was often missing.

the other colleges, to non-student use (particularly, counselor exploration) of the computer. In fact, an unusually large proportion of time was devoted to this--partly reflective of the staffs' unusual interest in the project and its implications.

Number of Student Users and Uses. Table 4 presents the number of uses made of the Guidance Information System by month for each college. The bottom row of the table summarizes the total number of different students who were exposed to the system during the course of the year. It should be noted that, as we define it, one student can have several uses: (s)he may have returned for additional information or used more than one file of information (e.g., occupational and two-year college).

TABLE 4

TOTAL NUMBER OF USES OF THE COMPUTERIZED SYSTEM, BY COLLEGE, SEPTEMBER 1976-JUNE 1977

Month	College					All Colleges
	A	B	C	D	E	
September	-	-	-	6	-	6
October	31	-	5	79	-	115
November	30	33	71	39	72	245
December	19	8	44	13	60	144
January	13	7	12	41	25	98
February	19	25	10	73	45	172
March	56	17	59	54	128	314
April	34	12	22	85	44	197
May	38	15	32	71	47	203
June	14	11	0	14	13	52
Total N Uses	254	128	255	475	434	1546
N Different Total Users	159	87	144	381	288	1059

A total of 1059 different students obtained information, using the computer a total of 1546 times.[1] As can be expected, the number of uses shows the same variability as did the amount of time on-line: College B had the fewest uses (128), and College D the most (475). Again, we

[1]Note that students who used the computer as part of a group experience, and never individually, are not included in these counts.

suspect that counseling staff size in relation to total enrollment, rather than newness to the project, accounts for College B's relatively low use. This is supported by the usage in College C which, also a new participant, exhibited a median number of uses.

In characterizing the type of information requested this year, there are apparent similarities to prior years. As usual (combining all colleges) approximately half of all uses (48%) were in the Occupational File; taken site-by-site, however, some colleges this year (notably College B)[1]--as in prior years--made more use of the Four-Year College File than other colleges.

In characterizing the attributes of the student users, most were first or third semester students, and the largest single proportion (33%) were identified as studying Liberal Arts, indicating a great need for information on the part of this population. In decreasing order of frequency, the next largest proportions of students were business majors and health/service majors, followed by science and the technologies.

Table 5 presents three-year data for Colleges A, D, and E summarizing the number of uses from September through May. For each college separately, the number of uses for the three years combined ranges from 827 (College A) to 1450 (College E).

TABLE 5

A COMPARISON OF THE TOTAL NUMBER OF STUDENT USES IN COLLEGES A, D, AND E, FOR THREE TIME PERIODS

Period September-May	College			All Colleges
	A	D	E	
1974-1975	182	155	466	803
1975-1976	405	584	563	1552
1976-1977	240	461	421[a]	1122
Total All Periods	827	1200	1450[a]	3477

[a]These numbers do not include use for September or October 1976.

[1]College B this year used the Four-Year College File for approximately 75% of all uses. This is substantially more than any college in any other demonstration period, and probably results from the assignment of the transfer counselor as project coordinator.

Looking at the data by year, after a dramatic increase in total uses during Year 2 (an increase of 93% from Year 1), the number dropped in the current (1976-1977) period. The decrease of 28% from Year 2 to Year 3, however, did not bring total uses down to the first year level. This is particularly interesting considering that the total amount of time on-line in Year 3 was less than Year 1. Taken together, these data suggest that, in general, colleges tend to make more efficient use of computer time to serve individual students as they become more experienced.

In summary, year-to-year variations in use are expected occurrences. Colleges, like secondary schools, peak after the first period, and then reach a more stable level of use. Different colleges, however, reach different peaks and level off at different rates. Each individual college appears to develop its own pattern--a consistent average daily amount of time spent using the computer, stressing use of certain files more than others, and serving fairly unique subpopulations of students.

Average Number of Uses Per Student User. By dividing the total number of uses by the number of different student users, we can obtain the average number of uses per student. This year, College C averaged 1.8 uses per user, and Colleges A, B, E, and D averaged 1.6, 1.5, 1.5, and 1.2 uses, repsectively. These differences reflect a variety of things, including how thorough a student's first experience was, and/or whether or not (s)he is encouraged to return. Although these averages are fairly consistent from college to college, College D had the lowest average number of uses per user--students here were least likely to return to use the computer. Based on our knowledge of their procedures, most College D students had some group exposure to GIS before their individual appointments.

In examining year-to-year variations in the number of uses per student user for the three colleges (combined) that participated continuously in Years 1, 2, and 3, the average increased from 1.3 in Year 1 to 1.5 in Year 2, and decreased in Year 3 to 1.4. Thus, there is overall consistency in repeat interactions despite individual differences.

Average Time Per Student Use. There is somewhat greater variation in the average length of time devoted to a computer use than in average number of uses per user.[1] This year, College A averaged the longest

[1]The average time per student use was calculated by dividing total time used for students by the number of student uses.

time, 26 minutes; and College E the shortest, 14 minutes. Colleges B, C, and D averaged 18, 19, and 18 minutes, respectively. It is interesting that in each of the three years, College A spent substantially more time per use than any other participant, and College E consistently used a relatively small amount of time. This difference is attributable to style: College A schedules hour-long appointments with students so that all questions and concerns can be dealt with during the session at the terminal. College E, to a greater extent than any other college, "batches" student requests (processes them in the students' absence)--a procedure that takes considerably less terminal time, although it requires pre- and post-sessions with students in which GIS and the output are explained.

Mode of Use. There are two primary ways of using GIS. First, the system can be used to obtain specific information about an occupation or a college in which the student is interested. This is called the "descriptive" mode. Alternatively, a student can "search" the computer's data files for a list of careers or colleges that meet certain requirements. The search mode is a more creative use of the computer's capacities, and is most characteristic of how colleges, in all years, used the Guidance Information System.

In each year, including the current one, College A employed the search mode almost exclusively (in 89% of all uses this year). At the other extreme, half of College D's uses were searches (50% in Year 3). Of College E's uses this year, 82% were for searches (over all years, College E employed searches in 85% of the instances). Year 3's new participant Colleges, B and C, also used the computer predominantly for searches, accounting for 95% and 76% of their uses, respectively.

The second variation in use of GIS is whether the student was present at the terminal while his/her request was being processed (defined as direct interaction). If the student submitted a written request, which was processed in his/her absence, use was defined as indirect or batched. In each prior year, direct use predominated; this year was no exception. For all colleges combined, direct interaction accounted for 79% of all use, varying from 48% at College E to 98% at College C.[1] As in previous years, College E had the highest proportion

[1]These proportions are calculated on the basis of 1374 of the total 1546 uses--the number identified as direct or indirect use.

of indirect use. In fact, all other colleges this year used direct interaction at least 85% of the time. A discussion of the relative advantages of direct and indirect use can be found in previous years' reports.[1]

Effects of Outreach on Counselor Attitudes

IRDOE staff hypothesized that one of the ways in which our outreach effort would affect counselors would be to change--improve--their attitudes toward the computer's place in career and educational counseling. In this section of the report, we will examine differences in attitudes, based on counselors' responses to the December and May administrations of the Community College Counselor Questionnaire.

Since we worked individually with 59 counselors at the terminal, there were, as expected, substantial increases from the Fall to the Spring in the amount and type of computer exposure respondents reported having: there was a dramatic increase in the proportion of respondents who reported having seen a computer demonstration (from 48% in December to 93% in May); and a large change in the proportion of counselors who reported personally operating the terminal (from 38% in the Fall to 70% of the respondents by May). Moreover, the proportion of counselors who reported having seen a student's computer printout rose from 63% to 81%; and the proportion of counselors who reported having referred students to the computer increased from 68% in December to 85% in May. Thus, based on counselors' own reports, our outreach efforts resulted in greater counselor awareness of and involvement in the project.

On both questionnaires we presented a series of statements to which counselors were asked to indicate, on a four-point scale, the extent of their agreement or disagreement. Since they were favorably disposed to begin with, many of the favorable ratings did not change in May. For example, on the December questionnaire, 95% of the respondents "agreed" or "strongly agreed" with the statement that "most students could benefit from using the computer"; in May the proportion

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[1] See: B. R. Heller; L. Chitayat, A. Jaffe, and B. R. Heller, op. cit.

was 96%.

On other items, however, a comparison of both questionnaires revealed several positive changes from December to May in the way the computer aid was regarded. One of the major changes was an increase in the proportion of counselors who agreed with the statement that "the computer is better at information-giving functions than is the typical counselor" (from 46% to 65%). Also, an increased proportion of counselors (57% in the Fall, 72% in the Spring) disagreed with the statement that "it is difficult to make the computer accessible to staff and students who want to use it." There was also an increase in counselors disagreeing with the statement that "information obtained from a computer probably contains more errors than information available in other standard reference sources" (85% disagreed in December, and 92% in May). In terms of the computer's value in helping students, there was an increase (from 59% to 68%) in the proportion of counselors agreeing that "the computer system is useful for students who do not have a clear idea of what to do in the future."

Some changes from December to May may indicate increasing proportions of counselors who had begun to realize the limitations of computers in general, and GIS in particular. From December to May there was an increase (from 18% to 32%) in the proportion who agreed that "students are mostly concerned with those aspects of colleges and careers that cannot be put into a computer." Although a minority of respondents to each questionnaire agreed that "the information in a computer can provide is much more easily obtained elsewhere," there was an increase from the Fall to the Spring, from 3% to 16%, in the proportion who believed information could be more easily obtained by other means. Counselors felt that the computer is flexible enough for student needs, although a smaller proportion agreed in May (83%) than in December (97%). A final example is the increase in the proportion of counselors in May (20%) as compared with December (8%) who considered the computer to be little more than a "gimmick."

In comparing the types of positive and negative changes (from the December to the May administration), it appears that when attitudes improved in a positive direction they involved the computer's accessibility, usefulness for undecided students, accuracy, and value as an information-giver. Some of the changes in a negative direction--the increasing proportion of counselors believing that students are more interested in aspects of colleges and careers that are not computerized, and that the computer is inflexible in terms of students' needs--may reflect an awareness that there <u>are</u> things that a computer cannot do for students. One counselor whose attitude remained favorable stated, "Familiarity with its [the computer's] operation helped me in realizing the limitations of the system." And, in Volume 1, Issue No. 5 of ON LINE (see Appendix C), the College C coordinator wrote an article to this point.

These data tend to indicate that, as a result of exposure, some counselors have become more realistic in their expectations. Among those who believed the computer to be a "gimmick," several indicated that it was very useful in attracting students who otherwise might not have come in to see a counselor.

In the May questionnaire, counselors were asked to indicate whether they had hands-on experience at the computer during the year, and if so, how it affected them. Of those respondents who had hands-on experience, almost all rated it "very helpful," particularly in increasing their comfort in working with computers. One counselor said, "It made it seem more real and a little bit of fun, like playing detective." Others indicated it helped them understand the Guidance Information System. As another counselor stated, "You can't really understand it until you've used it."

Counselor attitudes, as measured by their responses to a questionnaire administered early and late in the project year, can be summarized as follows: (1) counselors remained generally very favorable toward the computer throughout the year; (2) their attitudes about the computer's

accuracy, accessibility, and information-giving function improved from December to May; (3) counselors tended to express more awareness of the computer's limitations as the year progressed; and (4) counselors who received hands-on computer training found it a helpful experience

Effects of Outreach on Counselor (and Faculty) Referrals

One of the rationales underlying this year's effort to reach counselors was to involve more of them in investigating computer-aided counseling; to this end, individual hands-on training was offered, and a newsletter was circulated. And these techniques did indeed tend to increase awareness and stimulate thinking. In this section, we will discuss how the outreach effort affected counselor behavior--the number of counselors referring students to the computer, as well as the number of students who were referred by counselors.

Table 6 (page 38) shows how student users at each college became aware of the computer's availability--as they reported it at the terminal sign-in. The data points strikingly to the fact that of all the sources at each college, counselor and faculty referral played the greatest part in bringing students to the computer. The proportion of students who came to the computer at the suggestion of faculty or counselors ranged from 45% at College B, to 85% at College C. Although this is the first year IRDOE collected systematic referral data from each participant, we collected similar data from College E in Year 2 that can be used for comparative analysis. Last year, we found that 57% of the student users were referred by counselors or faculty, the greatest single sources of referral. Given the increase to 74% in counselor and faculty referrals at College E, we can conclude that the outreach efforts strengthened the important role played by counselors and other faculty in bringing the computer resource to students.

TABLE 6

PROPORTION OF STUDENT USERS REPORTING SOURCE OF REFERRAL TO THE COMPUTER, 1976-1977, BY COLLEGE
(Figures in Percentages)

Referral Source	College					All Colleges N=1059
	A N=159	B N=87	C N=144	D N=381	E N=288	
Counselor or Faculty	46%	45%	85%	51%	74%	61%
Special Demonstration	5	12	0	0	0	1
Newspaper Article	1	2	2	0	3	2
Posters	5	2	0	0	1	1
Friends	7	2	6	2	8	5
"Walked In"	6	12	2	7	4	6
Unknown[a]	30	25	5	40	10	24

[a]The huge proportion of "unknowns" include both students who did not respond to the terminal operators' question as well as frequent instances where the terminal operator neglected to ask for this information. Those instances where the proportion of "unknowns" is greatest (Colleges D, A, and B) employed larger numbers of part-time aides to operate the terminal.

Two other analyses of counselor referral data were undertaken. The first, again using data from only one college (College E), was done in an attempt to ascertain whether there were differences in the effectiveness of counselor referrals as a function of counselors' instructions. Three groups of students were used; in one group, the counselor scheduled appointments for each student to use the computer. In the two other groups (each led by a different counselor), the use of the computer was made an assignment. Matching group rosters with IRDOE's records of computer users, we found that none of the students for whom appointments were made used the system, while 40% and 70% of the other groups did so. Although these findings are based on small samples, they suggest a need for further inquiry, and may have greater implications for other types of class assignments or activities.

The second analysis of referral behavior was based on the 59

counselors who received hands-on training during the course of the project year.[1] To analyze whether there was an increase in student referrals after the individual counselor training session, we compared the number of students (s)he referred before and after the training.

For these 59 counselors combined, 43 students were referred before training and 156 afterwards. This is an increase of more than threefold. These raw figures were adjusted to take into account the fact that counselors had hands-on experience over a course of months. Thus, individuals' "before" and "after" periods were of different lengths. With the adjustment, in which an average number of referrals per month per counselor was calculated, the increase in referrals after training was 52%.

These data taken overall obscure the fact that some of these 59 counselors were not affected by the hands-on experience--at least in terms of referring students--while others were. For example, one counselor at College E referred one student before hands-on training, and 16 afterwards. There were other counselors who referred no students before or after their experience at the terminal. Thus, although the hands-on training seems to have had an overall positive effect, and a positive effect on the referral behavior of some counselors, it was not effective for others. One is led to conclude that despite the nature or extent of individual outreach activities some members of the counseling department do not become involved in the computerized occupational information retrieval system.

Effects of the Computer System on Counseling Departmental Activities

Over the course of the project, there have been questions raised with regard to the effects of the availability of the computer system on the duties of individual counselors and on the total division of departmental responsibility. This year an attempt was made to ascertain whether the availability of the computer system had any departmental-wide impact, or any impact on the activities and priorities of the counselors. Most of the information in this section came from the responses of the colleges' coordinators to the Community College Coordinator Questionnaire.

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[1] Fifteen counselors were trained at College A, 17 at College C, 9 at College D, and 18 at College E. At College B, all counselors saw a demonstration, but none received hands-on training.

Before turning to these data, three conditions should be noted; first, some of the coordinators felt more confident about their perceptions in this area than others. All, however, were asked to give us their best assessment, and to consult with their colleagues or administrators who might be in a better position to estimate changes. The second condition to bear in mind is the University-wide upheavals--tuition and budgetary cutbacks--that probably had a more significant impact on counseling and other college activities than any other factor. Finally, each participating college differs from one another in how they counsel, in how they are structured, and in the nature of the needs of the students they serve.

Table 7 on page 41 summarizes the coordinators' response when asked to indicate whether the computer's availability stimulated change in the amount of time the typical counselor spends on a variety of activities - e.g., small-group, transfer, and "psychological" counseling. The data show that changes (as perceived by project coordinators) brought about by the computer varied from college to college. Whereas Colleges A, B, and E perceived an increase in the amount of transfer (j) and individual counseling (h) as a result of the computer's availability (also activities (a), (b), and (c), in Table 7), Colleges C and D noted either a decrease or no change in these activities. College B noted an increase in personal-problem counseling (e), small group activity (g), and family conferences (n)--although no other coordinator indicated change in these areas. Surprisingly, all coordinators perceived the computer as making "no difference" on the effort they expended "helping students evaluate their strengths and weaknesses" (f).

Colleges C and D seemed to indicated very different responses from the other three participants. Yet, at first glance, these two colleges appear to have little in common--one is new to the project, the other a three-year participant; one serves a suburban middle-class group, and the other a blue-collar/minority group. They differ from one another in size, in career education thrust, and in rank and tenure of the coordinator. What distinguishes them from Colleges A, B, and E may be the fact that the operation in the latter three colleges consisted of one-person-plus-help in operating the terminal, while the project at Colleges C and D involved many people. Thus, the responses from the coordinators at Colleges A, B, and E may reflect their own experience and not

TABLE 7

COLLEGE COORDINATORS' PERCEPTIONS OF THE EFFECTS OF THE COMPUTERIZED SYSTEM ON THE RELATIVE AMOUNT OF EFFORT SPENT BY COUNSELORS ON VARIOUS ACTIVITIES

Activity	Colleges (Coordinators) Indicating Computer's Effect on Each Activity:		
	Increased	Decreased	Made No Difference
a. Giving students information about specific occupations	A,B,E	C,D	
b. Talking about families or clusters of occupations	A,B,E		C,D
c. Directing students to non-computer career resources	A,B,E	D	C
d. Helping students clarify values	A,B		C,D,F
e. Helping students with personal problems	B		A,C,D,E
f. Helping students evaluate their strengths and weaknesses			A,B,C,D,E
g. Counseling in small groups	B		A,C,D,E
h. Counseling individual students	A,B,E		C,D
i. General occupational counseling	A,D,E	C	B
j. Transfer counseling	A,B,E	C	D
k. Financial aid counseling			A,B,C,D,E
l. Planning students' academic programs			A,B,C,D,E
m. Administering or suggesting diagnostic tests or inventories	A	C	B,D,E
n. Conferring with students' family members	B		A,C,D,E
o. Conferring with other staff about a student's needs	B,D,E		A,C

the department's experience. As a hypothesis, this is supported by the comment from the College A coordinator who indicated that when an activity increased it did not increase for all counselors, but only for the few who performed those functions.

When asked more directly about changes that the computerized system may have had on departmental organization and priorities, most coordinators perceived some, but not many, differences. The project coordinator at College D felt that the computer system helped centralize occupational counseling at that site. At no other college was there a relationship between centralization of function and the computer. College A's coordinator indicated that although career and transfer counseling was more centralized during 1976-1977, this shift was planned by the department and not sparked by the computer project.

Both College A's and C's coordinators indicated that the computer increased the number of staff members who became involved in decisions about individual students, and that more non-professionals were used to help students obtain useful information about their occupational or educational concerns. College D's coordinator made a related point--the availability of the computer improved the relationship between counselors and non-professionals, at least those on staff of the Career Resource Center.

At both Colleges B and C there was an increase in the priority given to both occupational and transfer counseling since the advent of the computer project. College D increased the priority given occupational counseling as a result. Colleges A and E said that the computer stimulated no change in emphasis.

College E's coordinator perceived an increase in the number of students seeking out counselors as a result of the computer's availability, although no other respondent thought that the total number of students seen had changed. As the coordinator at College D stated, there appeared to be a "trade-off": the computer reduced the number of visits to counselors by students who wanted information, while it increased the number of students wanting to explore career and training opportunities in greater depth.

Overall, the coordinators felt that the computer system served to increase <u>and</u> decrease the amount of work the typical counselor had to do. College B indicated it tended to increase the number of students "seeking <u>better</u> counseling." College A noted both an increase in the number who "use [the computer] and learn about specialist counseling, and the number who contact specialists or counselors and learn about [the computer]."

On the other hand, computer use tended to decrease the number of students asking counselors "nuts and bolts questions" (College B), since many information-related questions could be answered by the computer. As the coordinator at College D reiterated, "Again, it's an equal trade-off, with no significant change" in the net amount of counselor effort. College E's coordinator indicated that while the overall amount of counselor effort did not change, computer use "improved the quality of the counseling session."

In summary, the computerized information system was seen to have varying impact on the conduct of occupational and educational counseling at the different colleges. There was no agreement as to how the system affected the activities of the typical counselor, and only one college noted an increase in centraliztion of counseling as a result of the computer aid. Responses did suggest that although there was no overall effect on the total amount of work a typical counselor had to do, the use of the computer resulted in a better division of function between paraprofessionals and counselors, and provided an opportunity to improve the quality of the counselor-student interaction.

Before describing the reactions to the computer project, we will summarize the major findings.

The results of this third demonstration year confirmed some outcomes from Years 1 and 2, and added some new knowledge about the computer-aided counseling experience in the community college. As in years past, we found that there was substantial variability from site to site in time used, students served, and characteristics of use. There was no difference in the high level of enthusiasm exhibited by the counselors at every site.

In examining the three-year experience for Colleges A, D, and E, we found year-to-year fluctuations in the amount of computer use. Year 1 saw the lowest usage, Year 2 the highest, and Year 3's level of use fell between these extremes. Although a college varied in the amount of year-to-year use, the more qualitative aspects of the computer experience (e.g., direct versus indirect use, file use, student user characteristics remained quite stable.

From this year's analyses, we can conclude that there are no differences that can be directly attributed to CUNY and non-CUNY status. SUNY College B's usage this year closely paralleled that of other (CUNY) colleges in their first year of participation, and counselors and staff exhibited the same positive responses. As a hypothesis, a contributing factor accounting for College B's relatively low usage was the small size of its counseling department, and that the predominant use of the computer for obtaining college information resulted from the assignment of its transfer counselor as project coordinator.

The results of this year's counselor outreach efforts (the individual hands-on training) indicate that some counselors do increase their use of the computer--either directly by bringing more students to the terminal, or indirectly by referring them. It is apparent, however, that despite having received more information and experience, some counselors continue to make little use of the computer, at least in the months following their personal exposure to the system.

Although the availability of a computerized information system does not seem to have substantial effects on the structure of counseling departments or on the total amount of counselor effort, there is some evidence that the computer makes possible an improvement in the quality of counseling, by providing valuable information and not taking up the counselors' time to do it. A related outgrowth was that the computer's availability increases the use of paraprofessionals and assistants in the information-giving aspects of the counseling process, and improves the relationships between professionals and non-professionals.

REACTIONS

In this section, we will describe some of the student and staff reactions to the computer-aided counseling project. We will also examine the extent of the project's "spread" outside the five participating colleges.

According to our observers' reports, most counselors were overwhelmingly positive in their reactions. This was confirmed by the coordinators at each site. All people seemed to find using the computer

exciting, fun, stimulating, and interesting. Some, however, remained anxious--a reaction to the "machine" and mechanical aspects--and others were not led to make more student referrals. Although we have received questions in the past, the hands-on training seemed to generate more questions--about the project, its costs, probabilities of continuation, and about other computer systems or uses of other information resources as they compare to GIS. We were asked how best to use GIS, with which type of student, and whether it was appropriate for group activity, for special needs groups (e.g., handicapped or bilingual), or for students with limited reading ability, for example. We were told that GIS saves counselor and student time, that it provides a greater amount of information than any one person, that it gives the student something to take home and to discuss with others, that it exposes students to a piece of modern-day technology, and that it promotes a student's interest in his/her own career development.

A sample of positive comments made by counselors were: "It's an excellent counseling tool"; "It's mostly a gimmick"; "...it has made me aware of the need for information which I lack"; "It has provided one additional useful tool for counselors and students"; "[It provides] a good introduction to data gathering"; and "...preliminary counseling sessions aimed at helping students focus have been minimized by referring students to the computer."

There were a few negative reactions to GIS' content and structure. Among them were questions about accuracy of the data, the use of a national (not regional) base for occupational outlook and earnings; the "traditional" quality of the occupations in the file; the absence of information about specialties within an occupation (e.g., psychiatric nurse); and the inadequacy of the scholarship and financial aid information.

The single most negative person, the career counselor at College B, indicated that since the information in the Occupational File was based on the DOT (last updated in 1965), the occupations were "stereotyped and outdated," and better sources of information were available. After several discussions his attitude seemed to change from strongly negative to greater receptivity--however, to the best of our ability to determine, he never operated the system himself (he did observe others at the

terminal) nor did he refer students. Since all evidence indicates the positive effect on student usage of interested leadership and support, we can assume that the relatively low usage of the Occupational File at College B was also related to the attitude of this career counselor towards computer-aided systems.

To obtain direct reactions from students about their experience with the computer, questionnaires (see Appendix A, User Questionnaire) were left at the terminal to be completed immediately following their use of the system. A total of 151 questionnaires were filled out and the reaction was highly enthusiastic, almost without exception. Nearly all (97%) students stated that they would recommend the computer service to their friends.

Of those students who used the computer to obtain college information, approximately half (48%) reported learning new things (e.g., about requirements, location, majors, tuition, transfers, and curriculum), and 84% reported that they were applying to institutions they learned about through the computer. When asked to rate the usefulness of the system for college information, 99% of the students indicated it was "very useful" or "somewhat useful."

The occupational information also received high marks from those students who used that file. Virtually all found the computer "somewhat" or "very useful," and between 73% (at College E) and 100% (at College A) of the students intended to follow up leads they obtained.

General comments by students centered on increasing the computer's availability, and on more publicity. They asked for more detailed and more frequently updated information. A selection of some of the more interesting comments (both positive and negative) follow:

"[Using the computer] broadened my view [and gave me] more in-depth information on careers";"[I now know of] some new careers I didn't know existed in [my] field"; "The computer was very useful"; "They should terminate this method because it does not help people at all"; "Advertise more"; "Much more time is needed to work with the computer"; "I feel that [the computer] should answer more detailed questions, such as courses needed, credits, etc."; and, "The information was beautiful."

The coordinators also described the students' enthusiasm, and provided some examples of how they benefited from the experience. At

College D, the coordinator pointed out that students were often confronted with new options for consideration. For example, a student who had decided to transfer to College X for a specific program checked the computer and exclaimed, "Oh, I didn't know College Y has it too! " A project assistant (College A) recalled one studetn who came to the career library with no clear occupational goal, but knew he liked "science and physical work." The computer printed out "marine biologist," an occupation that excited him enough so that he is currently seeking relevant volunteer work, and has already consulted someone in the field.

There was also reported evidence suggesting that use of the computer redirected students toward more realistic goals. College C's coordinator tells of a student with poor eyesight who was thinking of pursuing a career (that the computer indicated as) requiring good visual acuity. The student then used the computer to search for occupations that retained his same interests, but without the strong visual component; several alternative occupations were obtained. Through the use of the computer, the coordinator at College B was able to ascertain that one student's career goals were incompatible with her educational plans; this might not have come to their attention until too late, had the student not used the computer. The CAI supervisor (College B) noticed that, for some students GIS counteracted their negative feelings about computers in general (due to experiences with bills), and their leery attitudes towards computerized data banks (fearing invasion of privacy).

As in each previous year, the computer project generated a great amount of interest and attention that reached beyond the boundaries of the participating sites. Again in 1976-1977 IRDOE and the staff at each college received many requests from outsiders for information for friends and family; and, as before, these requests were met without detriment to the project's priorities and objectives.

In addition to telephoned and written requests, special demonstrations were conducted at IRDOE's offices and at the participating colleges. Members of the State Education Department's Bureau of Guidance and Two-Year Colleges explored the data files, as did a representative of the Department of Civil Service, and a member of AFL-CIO's District Council 37. An internationally recognized authority on occupational information and counseling paid a visit to College C to see GIS "in action."

All participants this year indicated that they served students and staff from other colleges and/or high schools at their campuses. Overall, approximately one hundred "outside" students and 30 staff members were so involved. Visitors from as far away as a community college in Texas were given a demonstration of the computer's capabilities, and many non-participating CUNY and SUNY colleges were also accommodated. In addition, College D reports that, as part of their career education program, demonstrations were conducted for parents, community groups, and community representatives.

CONCLUSIONS AND RECOMMENDATIONS

This report presents the findings from the third year demonstration of a computer-based information delivery system. In each year of the project, IRDOE attempted to illuminate and resolve issues relating to the feasibility and usefulness of the Guidance Information System as it applied to postsecondary students and institutions. The focus of this report has been on summarizing the entire three-year experience in which a total of seven different community colleges participated. Our intent was to convey to the reader a sense of those aspects of computer use that related to the characteristics of a specific college as well as those aspects that are more generic.

At the conclusion of the first, 1974-1975, year of the demonstration at the community college level--in which questions of feasibility were paramount--there was ample evidence that the computerized delivery system was appropriate and reliable, and that the reactions of staff and students were favorable. The use made of the system by the four CUNY community colleges was, however, less than that of the high schools. We hypothesized that colleges' greater organizational complexity resulted in more fragmented project staffing and supervision which, in turn, had implications bearing on slower implementation and lower initial use.

During 1975-1976, IRDOE staff worked with five CUNY community colleges, concentrating efforts on increasing usage of the computer in three of the colleges that participated in the initial year. Their usage increased by 93%, while that of the two new sites was comparable to the first year sites' level of first year use. Thus, at the conclusion of

the second year there was sufficient data to suggest that colleges do experience a "slow first year," needing a longer start-up period than the high schools.

The findings for the two colleges new to the project in 1976-1977 do not invalidate the "slow start" hypothesis. One of these colleges, College B, made much less use of the computer than Colleges A, D, and E--all of which participated in each of the previous years. It is very likely that given a second year of computer availability, College B would exhibit increased utilization. This is particularly probable in light of their developing awareness of the logistical problems that were hampering use, and their growing comfort and satisfaction with the computer.

Although College C (also new to the demonstration this year) made considerably more use of the computer than College B--and even surpassed the experienced colleges on some measures--there is also reason to suspect that a second year of participation would see an increase in the number of students served. This year, a sizable amount of College C's computer time was used by counselors learning about and exploring the system. It is likely that less of this activity would occur in subsequent years, and more time devoted to individual students. Thus, we still support the hypothesis that:

- Community colleges in their first year of involvement get off to a slow start, during which time the computer system is being integrated into the ongoing pattern of counseling activity.

While start-up inertia accounts for the relatively low level of use in colleges' first year of participation, differences among colleges in the first or subsequent years are attributable to how a particular college implements the project--how it is staffed, how it is publicized, and what role is assumed by members of the counseling department. In other words, the findings from 1976-1977 substantiate the generalization that:

- Use of the computer system varies as a function of college style.

We can compare, for example, College C's and College B's usage this year: both are new to the project, yet College C used the computer a greater amount of time and involved a larger number of students than did College B. We can also make comparisons among Colleges A, D, and E which, although all experienced sites, differ quite substantially from one another in the amount of use they make of the computer. As we indicated

in this document, these differences are reflective of their unique characteristics and implementation strategies.

The analysis of the data for the one non-CUNY community college in this year's demonstration strongly suggests that there are no differences accruing to implementation, results, or reactions from CUNY or SUNY affiliation. What distinguished the SUNY community college from other new college participants, both past and present, were stylistic characteristics of that college: the small number of counselors and the size of the student enrollment, the division of project responsibility between two departments, and the assignment of the transfer counselor as co-supervisor which probably contributed to College B's predominant use of the computer for college information.

To put the findings in perspective, it may be beneficial to compare the community college experience with that of the high school and correctional facilities. The results of IRDOE's evaluation activities in these settings indicate that:

- Variations in level of use are found among sites of a similar type. The college-to-college differences parallel those found among high schools and among prison sites.

Furthermore, there is evidence that:

- Settings differing in organizational complexity differ in regard to the length of time needed to implement a computer system.

Organizationally, community colleges are more complex institutions than high schools, but less intricate than the correctional facilities. The high schools exhibited no start-up inertia. On the contrary, their pattern was one of peak usage occurring in the first period, compared to the colleges where lowest use was made of the computer in the first year. Although we have available only one year's data on the demonstration of GIS in correctional facilities, we suspect that their start-up lag, very much in evidence and more severe than that experienced by any college, will continue part-way into a second year.

A final conclusion stems from a comparison of high school and college results:

- The amount and pattern of use of a computerized information system varies substantially among different types of settings.

Even allowing for variations, computer usage at the colleges never reached

the level that it did in the high schools. The differences in level of use between types of settings (e.g., between colleges and high schools, colleges and prisons) reflect the inherent nature of these institutions regardless of such factors as length of involvement in the project, experience, or staff or student-user reactions.

The results of the third year of the project in community colleges in New York State, in which concentrated outreach efforts were made to individual counselors, emphasize the importance of counselor involvement for optimal use of a computerized system. Counselors play a major role in referring students to the computer, and also serve to make students aware of the potential--and the limitations--of the computerized information. IRDOE's programmatic activities of counselor outreach that included information about computer systems and emphasized personal exposure, did stimulate some counselors to make more use of this resource. Even with such an effort, however, some counselors remained uninvolved and "hard to reach."

The availability of the computer did not appear to have had a definite impact on counselors' total work load, nor on the departmental division of counselor responsibilities, although there were reports that the quality of counseling improved: as a result, counselors became more free to counsel, since many of the information-giving functions were accomplished (and very often, better accomplished) by the computer. Also as a result of the system's availability, better use was made of assistants and paraprofessionals in pre- or post-counseling sessions.

As in each preceding demonstration year, IRDOE received feedback from project coordinators, counselors, staff, and students about the inadequacies of GIS in meeting their needs. The questions have centered around the accuracy, relevancy, and versatility of the information in the system. Students often request more detailed information than is provided, and require more up-to-date information on locally available options. Furthermore, the requirements of special-need groups, such as the handicapped, women, and bilingual students, are not adequately met by the current version of GIS.

By far the most consistently striking outcome of this demonstration has been its reception by each and every participant. Even in those instances where use was most minimal, the computer was enthusiastically

supported by the large majority of counselors and faculty; and by almost every administrator and student who used it. Each June, as the project was ending, the staff expressed concern about the possibilities of continuation for another year. Several participants have wanted to, but thus far only College D has managed to purchase computer access at their own expense for the summers following Years 2 and 3.

Computer-assisted counseling appears to be a very useful and productive endeavor at the community college. It serves the needs of a variety of groups both internal and external to the institution and provides a locus around which occupational counseling activities can be initiated or strengthened. It has the capacity to free counselors from information-giving activities, thereby providing the potential for a restructuring of individual counselors' or departmental responsibilities. The extent to which these potentials have been realized is conditioned almost entirely by externally imposed policies and concerns.

Colleges develop proficiency in maximizing use of a computerized system after an initial period of exploration with staffing, publicizing, and housing the equipment. A shared-access schedule is responsive to most colleges' needs for on-line time, and the assignment of supervisory professionals overseeing the activity of paraprofessional terminal operators is an effective division of responsibility.

Future efforts with regard to the direction of computer-assisted counseling might include modified managerial activities, revised or expanded data banks, and innovative ways to reach the non-involved counselor.

For the past three years, IRDOE project staff has assumed both a managerial and an evaluative role in the conduct of this project. New arrangements are needed to phase out a central manager, yet preserve its function. Colleges should cooperatively assume these functions so that they can share access to a computerized system in a least costly manner. Costs associated with computer time, as well as the other project responsibilities which have heretofore been undertaken by IRDOE, can be divided among small groups of colleges.

Most, if not all, of the research and evaluation of automated occupational counseling at the community college level in New York State has been based on the use of the Guidance Information System. Although

adequate in most instances, some effort should be made to investigate methods (including the use of alternative systems) to upgrade and expand the informational base. The needs of many postsecondary level students, including special-needs groups, are not currently being met by GIS.

As an outcome of this year's experience in reaching out to individual counselors, it has become apparent that this is a vital and continuous activity. Without adding to the costs by the inclusion of released time to enable the counselor-coordinator at each site to assume this role, alternative--and truly innovative--techniques must be created. IRDOE believes we are seeing only the beginning of computer-aided counseling. For every professional who is not reached, there is a large number of students who may not have access to a large variety of information; for each professional who is involved, so many students can be exposed to the potential benefits of the information stored, collated, and retrievable in a computer interaction.

APPENDIX A

EVALUATION INSTRUMENTS

1. User Identification - Community College Terminal Sign-In Instructions A1

2. User Questionnaire A2

3. Community College Counselor Questionnaire, 12-76 (Colleges A, D, E Version) A4

4. Community College Counselor Questionnaire, 5-77 (All Colleges) A6

5. Coordinator Questionnaire A10

USER IDENTIFICATION
COMMUNITY COLLEGE CAG TERMINAL INSTRUCTIONS
(Keep at terminal)

Before each individual uses the computer, type in the following:

1. Start with a SINGLE QUOTE (use the shift-7 key) '

2. Within the quote, type:

   a. STUDENT NAME
   b. CURRENT SEMESTER (1st, 2nd, 3rd...)
   c. CURRICULUM (Tech., Health, Busin., A.A., Other, Non-Matric.)
   d. BATCHED (if student was not present) or DIRECT (if student was present)
   e. HOW or FROM WHOM STUDENT LEARNED OF COMPUTER (School newspaper, poster, faculty member. If student was referred by a counselor, please simply type in the counselor's name.)

3. Close SINGLE QUOTE (use the shift-7 key) '

4. Press CARRIAGE RETURN KEY

5. If a user other than a student in your college is involved, type in enough information within the single quote to identify him (e.g., title or position), his affiliation (school or agency), and the purpose of the use (e.g., demonstration, personal, experiment).

EXAMPLE, STUDENT USER:

'JOHN SMYTHE 2ND AA DIRECT SCHOOL PAPER'

EXAMPLE, STUDENT USER REFERRED BY COUNSELOR:

'ANN BLACK 1ST HEALTH BATCHED JONES'

EXAMPLE, OTHER USER:

'ELT CHAIRMAN OLYMPIA COL. DEMO'

A B C D E

CITY UNIVERSITY OF NEW YORK
CASE INSTITUTE FOR RESEARCH AND DEVELOPMENT IN OCCUPATIONAL EDUCATION

Community College - Computer-Assisted Guidance
User Questionnaire

Department or Major_____

Semester_____

User Name_____
(optional)

Dear Computer User:

This questionnaire asks for your reactions to using the computer for college or career information. We would like to know your honest feelings, and guarantee that your responses will be confidential.

Please answer each question. Either place a check on the appropriate line or write in your explanation in the space provided.

1. Was it difficult to arrange for an appointment to use the computer?

_____No _____Yes; if yes, why?_____

2. Did you see or read the Student Study Guide before you actually used the computer?

_____Yes _____No _____Not Sure

3. Were the people who arranged for you to use the computer and those who helped you run it helpful?

Very Helpful / Somewhat Helpful / Not Helpful

4. Will you discuss the printout(s) with anyone? _____No; _____Yes: if yes, with whom?

_____ _____

5. Have you ever asked the computer for information about colleges?

_____Yes _____No

If you checked yes, Please answer (a), (b), (c) and (d):

(a) What kind of college information did you ask for? (check one or both)

_____a description of a specific college(s)

_____a list of colleges meeting my requirements

(b) Did the computer give you any new ideas about college? (check one)

_____No _____Yes; if yes, what?_____

_____

(c) Do you think you will apply to any colleges that you learned about through the computer? (check one)

_____Yes _____No _____Not Sure

(d) Overall, how would you rate the usefulness of the computer for answering questions about colleges? (check one)

_____/_____/_____/_____

Very Useful / Somewhat Useful / Not Very Useful / Not Useful At All

6. Have you ever asked the computer for information about careers (occupations)?

_____Yes _____No

If you checked yes, please answer (a), (b), (c), and (d):

(a) What kind of career information did you ask for? (check one or both)

_____a description of a specific career(s)

_____a list of careers meeting my requirements

(b) Did the computer give you any new ideas about careers? (check one)

_____No _____Yes; if yes, what?_____

_____

(c) Do you think you will follow up any leads about careers that you got from the computer? (check one)

_____Yes _____No _____Not Sure

(d) Overall, how would you rate the usefulness of the computer for answering questions about careers? (check one)

_____/_____/_____/_____

Very Useful / Somewhat Useful / Not Very Useful / Not Useful At All

7. Will you recommend the use of the computer to your friends looking for colleges or careers?

_____Yes _____No _____Not Sure

8. Please write any suggestions you might have for improving the quality or availability of the computer for giving career or college information.

_____

_____

_____

CASE INSTITUTE FOR RESEARCH AND DEVELOPMENT IN OCCUPATIONAL EDUCATION
CITY UNIVERSITY OF NEW YORK

Computerized Occupational and Educational Information Project
Community College Counselor Questionnaire

Dear Counselor:

As part of our evaluation of the computerized occupational and educational information project this year, we are asking staff at the participating colleges for their opinions and reactions. Even in those instances where you have had little or no involvement, we would appreciate your responses and assure you that they will be confidential. Although we ask for your name, it is entirely optional and will be kept confidential and your answers anonymous.

Please answer each question, and return the completed questionnaire in the envelope provided. If you need additional space, or would like to make specific suggestions or recommendations, please use the backs of the pages. Thank you for your cooperation.

1. Prior to this academic year, had you:

Seen a demonstration of the computerized project?	_____Yes	_____No
Heard about the project?	_____Yes	_____No
Operated the terminal yourself?	_____Yes	_____No
Seen a student copy of the computer output?	_____Yes	_____No
Discussed the project with your colleagues?	_____Yes	_____No
Referred students to the computer?	_____Yes	_____No

2. Prior to this year, how would you rate your overall opinion of the computerized information in terms of usefulness for the typical student?

Very Unfavorable	Somewhat Unfavorable	Fairly Neutral	Somewhat Favorable	Very Favorable

3. So far this year, have you:

Seen a demonstration of the computerized project?	_____Yes	_____No
Heard about the project?	_____Yes	_____No
Operated the terminal yourself?	_____Yes	_____No
Seen a student copy of the computer output?	_____Yes	_____No
Discussed the project with your colleagues?	_____Yes	_____No
Referred students to the computer?	_____Yes	_____No

4. Has there been any change in your opinion about the usefulness of the computer for the typical student from last year to this year?

_____No; please explain:_____

_____

_____Yes; please explain what stimulated the change in opinion:_____

_____

5. Following is a list of statements. Please read each one in terms of the computerized information system at your school and circle

(SA) if you strongly agree;
(A) if you agree;
(D) if you disagree; or
(SD) if you strongly disagree.

Try to respond to each statement even if you are not very familiar with the system; base your opinion on what you believe would be true.

Most students could benefit from using the computer	SA	A	D	SD
The computerized system uses up more staff time than it is worth	SA	A	D	SD
The computerized system gives students a clearer understanding of important considerations in selecting a career or college	SA	A	D	SD
It is difficult to make the computer accessible to staff and students who want to use it	SA	A	D	SD
Students who used the computer are more likely to follow up leads than students who obtained information from other sources	SA	A	D	SD
Staff have too many more important things to do than learn about the computer system	SA	A	D	SD
The computer is better at information-giving functions than is the typical counselor	SA	A	D	SD
Students are mostly concerned with those aspects of colleges or careers that cannot be put into a computer	SA	A	D	SD
Students are more likely to seek out resource information if it is available in a computer system	SA	A	D	SD
Information obtained from a computer probably contains more errors than information available in other standard reference sources	SA	A	D	SD
The computer system is useful for students who do not have a clear idea of what they want to do in the future	SA	A	D	SD
The information a computer can provide is much more easily obtained elsewhere	SA	A	D	SD
The computer is flexible enough to provide some usefulness for students with many types of needs	SA	A	D	SD
The computer is little more than a gimmick	SA	A	D	SD
It would be an improvement if each student could operate the computer him-herself	SA	A	D	SD

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Name (optional)

5. Following is a list of statements. Please read each one in terms of the computerized information system at your school and circle

SA if you strongly agree;
A if you agree;
D if you disagree; or
SD if you strongly disagree.

Try to respond to each statement even if you are not very familiar with the system; base your opinion on what you believe would be true.

Most students could benefit from using the computer	SA	A	D	SD
The computerized system uses up more staff time than it is worth	SA	A	D	SD
The computerized system gives students a clearer understanding of important considerations in selecting a career or college	SA	A	D	SD
It is difficult to make the computer accessible to staff and students who want to use it	SA	A	D	SD
Students who used the computer are more likely to follow up leads than students who obtained information from other sources	SA	A	D	SD
Staff have too many more pressing things to do than learn about the computer system's capabilities	SA	A	D	SD
The computer is better at information-giving functions than is the typical counselor	SA	A	D	SD
Students are mostly concerned with those aspects of colleges or careers that cannot be put into a computer	SA	A	D	SD
Students are more likely to seek out resource information if it is available in a computer system	SA	A	D	SD
Information obtained from a computer probably contains more errors than information available in other standard reference sources	SA	A	D	SD
The computer system is useful for students who do not have a clear idea of what they want to do in the future	SA	A	D	SD
The information a computer can provide is much more easily obtained elsewhere	SA	A	D	SD
The computer is flexible enough to provide some usefulness for students with many types of needs	SA	A	D	SD
The computer is little more than a gimmick	SA	A	D	SD
It would be an improvement if each student could operate the computer him-herself	SA	A	D	SD

CASE Institute for Research and Development in Occupational Education
Graduate School and University Center
City University of New York
33 West 42nd Street
New York, NY 10036

COMPUTERIZED OCCUPATIONAL AND EDUCATIONAL INFORMATION PROJECT
COMMUNITY COLLEGE COUNSELOR QUESTIONNAIRE

Dear Counselor:

This is a followup questionnaire to help us in this year's evaluation of the computerized occupational and educational information project. Please complete it whether or not you returned the first questionnaire mailed in December. Even in those instances where you have had little or no involvement with the project, we would appreciate your responses. Although we ask for your name, it is entirely optional and it, along with your answers, will be kept confidential.

Please answer each question, and return the questionnaire in the envelope provided. If you need additional space, please use the backs of the pages. Thank you again for your valuable input.

1. This year, have you:

Seen a demonstration of the computerized project?	_____Yes	_____No
Heard about the project?	_____Yes	_____No
Operated the terminal yourself?	_____Yes	_____No
Seen a student copy of the computer output?	_____Yes	_____No
Discussed the project with your colleagues?	_____Yes	_____No
Referred students to the computer?	_____Yes	_____No

2. Has there been any change in your opinion about the usefulness of the computer for the typical student over the course of this year?

____No; please explain:_____

_____

____Yes; please explain what stimulated the change in opinion:_____

_____

3. Have you had the opportunity of working directly at the computer terminal with a member of our staff?

____No; if no, please indicate why not (e.g., you had no time; we didn't contact you, etc.):
_____

_____

(Question 3, continued next page.)

____Yes; if yes, please describe how you feel this "hands-on" experience helped in terms of:

- comfort in working with computers:_____

_____

- understanding the Guidance Information System:_____

_____

- appreciation of the goals of the project as they relate to the creation of a new computer system:_____

_____

- new ideas or approaches to working with students:_____

_____

4. How would you rate your overall opinion of the computerized information in terms of usefulness for the typical student?

Very Unfavorable	Somewhat Unfavorable	Fairly Neutral	Somewhat Favorable	Very Favorable

5. How has the availability of computerized occupation and college information changed counselor duties? (e.g., do counselors do more or less information gathering? has occupational counseling become more or less centralized?)

_____

_____

_____

_____

_____

6. Since the computer assistance project began at your college, have you noticed a change in the number or type of questions you get from students about careers or further education?

____No

____Yes; if yes, please describe the change:_____

_____

_____

7. Following is a list of statements. Please respond to each even if you are not very familiar with the computerized information system at your school and circle

(SA) if you strongly agree;
(A) if you agree;
(D) if you disagree; or
(SD) if you strongly disagree.

• Most students could benefit from using the computer	SA	A	D	SD
• The computerized system uses up more staff time than it is worth	SA	A	D	SD
• The computerized system gives students a clearer understanding of important considerations in selecting a career or college	SA	A	D	SD
• It is difficult to make the computer accessible to staff and students who want to use it	SA	A	D	SD
• Counselors will probably never make much use of the computer in their work with students	SA	A	D	SD
• Students who used the computer are more likely to follow up leads than students who obtained information from other sources	SA	A	D	SD
• Staff have too many more pressing things to do than learn about the computer system's capabilities	SA	A	D	SD
• The computer is better at information-giving functions than is the typical counselor	SA	A	D	SD
• Students are mostly concerned with those aspects of colleges or careers that cannot be put into a computer	SA	A	D	SD
• Students are more likely to seek out resource information if it is available in a computer system	SA	A	D	SD
• Information obtained from a computer probably contains more errors than information available in other standard reference sources	SA	A	D	SD
• The computer system is useful for students who do not have a clear idea of what they want to do in the future	SA	A	D	SD
• The information a computer can provide is much more easily obtained elsewhere	SA	A	D	SD
• The computer is a potential threat to the jobs of counselors	SA	A	D	SD
• The computer is flexible enough to provide some usefulness for students with many types of needs	SA	A	D	SD
• The computer is little more than a gimmick	SA	A	D	SD
• It would be an improvement if each student could operate the computer him-herself	SA	A	D	SD

8. How would you feel if the computer project was terminated at the end of this academic year?

Very Disappointed	Disappointed	Indifferent	Relieved

9. Do you have any additional suggestions or recommendations about the computer project?

_____

_____

_____

_____

_____

10. Did you return our questionnaire mailed in December of this academic year? ____Yes; ____No

_____
Name (optional)

CASE INSTITUTE FOR RESEARCH AND DEVELOPMENT IN OCCUPATIONAL EDUCATION

COMPUTER-AIDED COUNSELING PROJECT (CAG)
COORDINATOR QUESTIONNAIRE, May 1977

I. STAFFING

1. As coordinator of the CAG project, to whom do you report?_____

Please indicate how frequently this year you have reported on the computer project_____

_____

2. In a typical week, estimate what proportion of your total working time was devoted to CAG (all aspects) _____

3. Focusing just on CAG, what proportion of the total time you spent on CAG activities was devoted to each of the following?

Management Procedures (scheduling, etc.). . . . . _____%

Publicizing CAG (writing ads; contacting counselors, professors; etc.) . . . . . _____%

Recordkeeping for evaluation . . . . . _____%

Preorientation with classes, groups, or individuals . . . . . _____%

Personally operating the terminal . . . . . _____%

Followup activities with students, including "decoding" printouts . . . . . _____%

Other; please specify_____ _____%

100 %

4. In terms of other personnel, what help with running CAG have you had available on a regular basis? For each person listed, indicate the amount of time and the nature of their duties.

Position	Time (hours per week)	Major Duties (in terms of tasks in Question 3)

5. Please describe any significant changes in personnel assignments during this school year, or, if appropriate, from last year to this year: _____

_____

6. This year you had access to the computer about two days a week. Is this arrangement adequate? _____Yes; _____No; please explain why_____

_____

II. STAFF INTEREST AND INVOLVEMENT

1. We are particularly concerned with how CAG is perceived by the members of the counseling department. In general, what seems to be the attitude of the counseling staff to CAG?

Negative	Somewhat Negative	Neutral	Somewhat Favorable	Positive

2. Has the attitude of the counseling staff changed staff substantially during the course of this year? _____No; _____Yes; if yes, how?_____

_____

3. From your perspective, has the proportion of counselors who refer students to the computer changed?

	increased	decreased	no change
from last year to this year?	_____	_____	_____
during the course of this year?	_____	_____	_____

4. From your perspective, has the proportion of other faculty members who refer students to the computer changed?

	increased	decreased	no change
from last year to this year?	_____	_____	_____
during the course of this year?	_____	_____	_____

5. This year an effort was made to give many counselors hands-on experience with the computer system. Please indicate your perception of the effects of this hands-on experience in terms of:

	increased	decreased	remained the same
counselor interest in CAG	_____	_____	_____
counselor referral of students to CAG	_____	_____	_____
counselor understanding of CAG's strengths and weaknesses	_____	_____	_____
counselor use of CAG to develop their own files	_____	_____	_____
proportion of counselors who can operate the computer on their own	_____	_____	_____
proporcion of counselors who do operate the computer on their own	_____	_____	_____

6. In some colleges, staff other than those assigned to CAG have been more or less involved in the operation--have run the terminal, assumed responsibility for followup with students, etc. Below, indicate faculty members who have been substantially involved in CAG.

Position/Department	Type of Involvement/Support

III. EFFECTS ON COUNSELING - In this section, please try to ignore any changes in the counseling department that resulted from general reductions in staff and budget and other school-wide forces. We are trying to focus on the effects of CAG.

1. Indicate how you think CAG has affected the relative amount of effort the typical counselo devotes to each of the following:

	increased	decreased	made no change
a. Giving students information about specific occupations			
b. Talking about families or clusters of occupations			
c. Directing students to non-computer career resources			
d. Helping students clarify values			
e. Helping students with personal problems			
f. Helping students evaluate their strengths and weaknesses			
g. Counseling in small groups			
h. Counseling individual students			
i. General occupational counseling			
j. Transfer counseling			
k. Financial aid counseling			
l. Planning students' academic programs			
m. Administering or suggesting diagnostic tests or inventories			
n. Conferring with students' family members			
o. Conferring with other staff about a student's needs			

2. Please indicate how CAG has affected the counseling department in terms of:

creating more centralized or less centralized transfer counseling _____

creating more centralized or less centralized occupational counseling _____

creating more centralized or less centralized financial aid counseling _____

improving or impeding working relationships among counselors _____

improving or impeding working relationships between counselors and other staff _____

increasing or decreasing the number of staff involved in decisions about individual students _____

increasing or decreasing the priority of career counseling _____

increasing or decreasing the priority of transfer counseling _____

3. From your perspective, please indicate how CAG has affected the number of students seeking out counselors (e.g., CAG may have eliminated the need for some counselor visits, or may have caused more students to want to explore careers or training with their counselors, etc.)

increased the number of students	no change	decreased the number of students

Please elaborate _____

4. CAG may do some work for counselors; it may also generate work for counselors. What do you think is the net effect of CAG on the amount of work the typical counselor has to do?

_____increased; please explain _____

_____decreased; please explain _____

_____other; please explain _____

IV. GENERAL PROCEDURES

1. Please describe how you informed counseling and other college staff of the availability of CAG. Please append copies of memos to department heads, articles in staff newspapers, etc.

Which of these were most effective?

Which of these were least effective?

2. Please describe the way in which the student body has been informed of the availability of CAG (indicated general publicity methods as well as more specific procedures, and append copies of bulletin board notices, articles in the student newspaper, etc.)

Which of these were most effective?

Which of these were least effective?

3. If a student is interested in using the computer, generally:
Who explains the computer operations and the computer instructions?

Who makes the appointment for the student?

Who helps students with the Student Study Guide?

Who operates the terminal?

Who helps students understand the output?

4. Please describe the arrangement for getting infromation back to a student after his request has been batched (i.e., run when the student is not present).

_____

_____

5. In the best of all possible worlds, indicate whether you would batch students' requests, and indicate why: _____

_____

V. HARDWARE PERFORMANCE AND SERVICE

. Data Access Systems, Inc., the terminal vendor, says that it will repair teletypewriter malfunctions within 24 hours. Did you ever need to call Data Access Systems, Inc., this school year?

_____ No; _____ Yes; if yes, on how many different occasions? _____
In how many of these instances were repairs made within 24 hours? _____

2. Rate the extent to which various computer network problems occurred.

Busy signal and/or no phone signal: /——— infrequent / occasional / frequent /

Password rejected: /——— infrequent / occasional / frequent /

Cutoff in middle of program: /——— infrequent / occasional / frequent /

Garbage: /——— infrequent / occasional / frequent /

Other: (describe) _____

_____

3. We are interested in your opinion about the service provided by Time Share Corporation in solving the computer network problems. Please rate their service on each factor below.

	poor	fair	good	excellent
Prompt response to phone calls for help				
Courtesy				
Willingness to provide alternatives				
Forewarning of possible problems				

4. If you wish to comment on other, service-related aspects of Time Share Corporation's operation, please use this space.

VI. OUTSIDE ACTIVITIES

1. Have any parent or community groups or individuals used CAG this year?

_____ No; _____ Yes: if yes, indicate: Who:_____
Number(s) involved:_____
How they heard about CAG:_____

_____

2. Have students attending other colleges or high schools used CAG at your school this year?

_____ No; _____ Yes: if yes, indicate the: Numbers involved:_____
School(s) involved:_____

_____

How they heard about CAG:_____

_____

3. Have staff from other colleges seen, used, or inquired about CAG this year?

_____ No; _____ Yes: if yes, indicate the: Number(s) involved:_____
School(s) involved;_____

_____

How they heard about CAG:_____

_____

4. Please make use of this space to describe other outside activities not covered:

VII. MATERIALS AND THEIR USE

1. Please indicate when a student first sees the Student Study Guide (e.g., when making an appointment, when arriving at his appointed time to use the terminal, etc.):

_____

_____

2. Are the students permitted to borrow the Student Study Guide?

_____ No; _____ Yes

3. In your opinion, is there anything mission from the Student Study Guide and/or User's Manual that should appear or that needs to be revised? (Consider, for example, whether a picture of a terminal would be helpful, whether new commands would be useful, whether "remedies" for malfunctions could be more usefully described, etc.)

_____

_____

4. The Student Study Guide explains the use of this system. Please rate its overall adequacy in terms of the typical student user at your school:

Reading comprehension level:

easy for the average student	at the average student level	hard for the average student

Definitions of commands and instructions (A, S, E, P, E, etc.):

easy for the average student	at the average student level	hard for the average student

Format (layout and arrangement):

poor	unsatisfactory	satisfactory	good

VIII. COLLEGE FILES

1. In your opinion, what changes could improve the colleges files?_____

_____

_____

2. Have you found most twoOyear and four-year colleges that you feel should be in the data bank are in fact included?

_____ Yes; _____ No; if no, what omissions have you found?_____

_____

3. The college files do not include other postsecondary, non-college educational institutions. Do you feel any such institutions should be included?

_____ No; _____ Yes; if yes, what types?_____

_____

4. Have you found many errors in the information provided?

_____ No; _____ Yes; if yes, indicate the particular types:_____

_____

IX. OCCUPATIONAL FILE

1. In your opinion, what changes would improve the occupational file?

_____

_____

2. Overall, in terms of searching for an occupations from the data bank, how understandable is the structure and content of the occupational file to the average student in your school?

very confusing	somewhat confusing	generally understandable	very easily understandable

3. The occupations in the data bank consist of a sample of occupations in the D.O.T. Does this sample include most of the types of occupations which students are interested in?

_____ Yes; _____ No; if no, list significant areas of omission:_____

_____

4. Does this sample of occupations include ones not appropriate or not diverse enough for students? (Consider jobs of too low or too high a level, near redundancies, etc.):

_____ No; _____ Yes; if yes, please specify:_____

5. This system is designed to be used nationally. Does this limit the value of the occupational file for your students?

_____ No; _____ Yes; if yes, how?_____

X. EFFECTS ON STUDENTS

1. Overall, in your opinion, what types of students benefit most from CAG? Please be specific in terms of:

Semester(s)_____

Ability level_____

Aspirational level_____

Curriculum (transfer or career)_____

Other_____

2. Overall, in your opinion, what types of studnets benefit least from CAG. Please be specific in terms of:

Semester(s)_____

Ability level_____

Aspirational level_____

Curriculum (transfer or career)_____

Other_____

3. Please cite any anecdotal examples that suggest that, for some students, CAG has resulted in expanded alternatives, options, or plans for the future.

4. Please cite anecdotal evidence that suggests that CAG resulted in a change of direction, ideas, or plans for the future.

5. Please cite examples that might suggest indirect effects CAG has had on students, such as increasing their personal involvement with staff.

6. Please cite examples that suggest that students seek out more counseling or advisement because of the computer.

7. Overall, how would you characterize students' reactions to CAG?

extremely negative	negative	neutral	positive	extremely positive

XI. GENERAL IMPRESSIONS, COMMENTS

Overall, do you feel that the computer has been a valuable tool for you in helping students with career and college plans? If you have any reservations about its usefulness, would they be changed by improvements in the specific computerized system employed, by a change in the location of the terminal, or by a change in the method of implementation?

Please discuss you views.

_____

Name of Person Filling out Questionnaire

6. Please cite examples that suggest that students seek out more counseling or advisement becuase of the computer.

7. Overall, how would you characterize students' reactions to CAG?

extremely negative	negative	neutral	positive	extremely positive

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UNIVERSITY OF CALIF.
LOS ANGELES

JAN 19

CLEARINGHOUSE FOR
JUNIOR COLLEGES

Name of Person Filling Out Questionnaire